

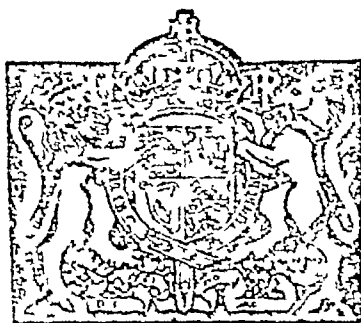
THE STATE AND INDUSTRY

A narrative of Indian Government
policy and action in relation to
industry under the Reformed
Constitution

By

A G CLOW,

CIE, I.C.S.



CALCUTTA GOVERNMENT OF INDIA
CENTRAL PUBLICATION BRANCH

1928

THE STATE AND INDUSTRY

A narrative of Indian Government
policy and action in relation to
industry under the Reformed
Constitution

By

A G. CLOW,

C.I.E., I.C.S.



CALCUTTA GOVERNMENT OF INDIA
CENTRAL PUBLICATION BRANCH

1928

Government of India Publications are obtainable from the Government of India Central Publication Branch, 3, Government Place, West, Calcutta, and from the following Agents —

EUROPE

OFFICE OF THE HIGH COMMISSIONER FOR INDIA.

42, GROSVENOR GARDENS LONDON S W 1

And at all Booksellers

INDIA AND CEYLON

Provincial Book Depots

MADRAS —Superintendent Government Press Mount Road Madras.
BOMBAY —Superintendent, Government Book Depot Town Hall Bombay
SIND —Library attached to the office of the Commissioner in Sind Karachi
BENGAL —Bengal Secretariat Book Depot Writers Building Room No 1 Ground Floor Calcutta
UNITED PROVINCES OF AGRA AND OUDH —Superintendent of Government Press United Provinces of Agra and Oudh Allahabad.
PUNJAB —Superintendent, Government Printing Punjab Lahore.
BEARNA —Superintendent Government Printing, Burma Pangoon
CENTRAL PROVINCES AND BEHAR —Superintendent Government Printing Central Provinces Nagpur
ASSAM —Superintendent Assam Secretariat Press Shillong
BIHAR AND ORISSA —Superintendent Government Printing Bihar and Orissa, P O Gulzarbagh, Patna.
COORG —Office of the Chief Commissioner of Coorg Bangalore.
NORTH WEST FRONTIER PROVINCE —Manager, Government Printing and Stationery Peshawar

Thacker Spink & Co. Calcutta and Simla.	R B Umadkar & Co., The Bharat Book Depot, Dharwar
W Newman & Co. Ltd. Calcutta	The Standard Bookstall Karachi Quetta, Delhi, Murree and Rawalpindi.
R Cambray & Co. Calcutta.	The Karachi Book Depot Elphinstone Street, Camp Karachi
S K. Lahiri & Co. Calcutta	The English Bookstall Karachi
The Indian School Supply Depot 309 Bow Bazar Street Calcutta.	The Standard Bookstall Quetta
Butterworth & Co. (India) Ltd. Calcutta	U P Malhotra & Co., Quetta.
Rai M. C. Sancar Bahadur & Sons 90-2A Harrison Road Calcutta	J Ray & Sons 43 K & L Edwardes Road Rawalpindi and Murree
Standard Literature Company Ltd. Calcutta	The Standard Book Depot Lahore Nainital, Mussoorie, Dalhousie Ambala Cantonment and Delhi
Association Press, Calcutta	N B Mathur Supdt. Nazir Kanun Hind Press Allahabad
Chukerverty Chatterjee & Co., Ltd 13, College Square Calcutta.	The North India Christian Tract and Book Society 18, Clive Road Allahabad
The Book Company Calcutta.	Ram Dayal Agarwala 184 Katra Allahabad
James Murray & Co 12 Government Place Calcutta (For Meteorological publications only)	The Indian Army Book Depot, Juhu Cawnpore
Ray Chudhury & Co 68-5 Ashutosh Mukerji Road Calcutta	Manager Vewal Ki-hore Press, Lucknow
The Oriental Publishing House, 34 Cornwallis Street Calcutta.	The Upper India Publishing house, Ltd. Literature Palace Aminuddaula Park Lucknow
Scientific Publishing Co 9 Taltolla Lane Calcutta.	Rai Sahib M Gulab Singh & Sons Mufid I Am Press Lahore and Allahabad.
Chatterjee & Co 204 Cornwallis Street Calcutta.	Rama Krishna & Son. Book-sellers, Anarkali, Lahore
B C Basak, Esq Proprietor Albert Library Dacca	Puri Brothers, Booksellers and Publishers Kacheri Road Lahore
Mitra Brothers Raj bahl.	The Tilak School Bookshop, Lahore
Higginbothams Madras	The Standard Bookstall, Lahore
P B Rama Iyer & Co Madras.	The Proprietor Punjab Sanskrit Book Depot, Saidmitha Street Lahore
Bochouse & Sons Madras.	The Insurance Publicity Co., Ltd Lahore
G A Natesan & Coy, Publishers George Town, Madras.	The Punjab Religious Book Society Lahore.
Theosophical Publishing House Adyar Madras	Manager of the Imperial Book Depot, 63 Chandney Chawck Street, Delhi
Bright & Co Trivandrum.	Fono Book Agency New Delhi.
The Booklover's Resort Talkad Trivandrum, South India.	Oxford Book and Stationery Company Delhi
E. M. Gopalakrishna Kone Pudumandapam Madura.	Supdt American Baptist Mission Press, Rangoon
Vijapur & Co Vizagapatam.	The Modern Publishing House Ltd 30 Phavre Street Rangoon
Thacker & Co Ltd. Bombay	Burma Book Club Ltd Rangoon
D B Taraporevala, Sons & Co Bombay	Manager The Hitevada Nagpur
Sunder Pandurang Bombay	Bhisey Brothers Booksellers and Stationers, Sitabaldi Nagpur
Ram Chandra Govind & Sons Kalbadevi Road Bombay	S C Talukdar Proprietor Students & Co., Cooch Behar
N M Tripathi & Co Booksellers Princess Street Kalbadevi Road Bombay	The Manager Ceylon Observer Colombo
New & Secondhand Bookshop Kalbadevi Road Bombay	The Manager The Indian Book shop Benare City
Mrs Radhabai Atmaram Sagoon Kalbadevi Road Bombay	The Srivilliputtur Co-operative Trading Union Ltd., Srivilliputtur (S I R)
A. H Wheeler & Co., Allahabad Calcutta and Bombay	Raghunath Prasad & Son Patna City
Proprietor New Kitabkhana Poona	The Students Emporium Patna
The Manager Oriental Book Supplying Agency 15 Shukrawar Poona City	K L Mathur & Bros Guzi Patna City
Rama Krishna Bros., opposite Vishrambag Poona City	Dandekar Brothers Indore City
S P Bookstall 21 Budhwar Poona	Pustakalaya Sahavak Sahakari Ltd Baroda
Manraldas & Sons Booksellers and Publishers, Bhaga Talao Surat.	The Hyderabad Book Depot Chaderghat, Hyderabad (Deccan)

NOTE

This review has been prepared and is published by order of the Government of India and has their general approval , but they should not be understood as accepting responsibility for every particular statement of fact or expression of opinion in it

CONTENTS.

	PAGE.
PREFACE	i
CHAPTER I —Historical Introduction	1
„ II.—The Industrial Commission	9
„ III.—Constitutional Reforms	18
„ IV —Organization	26
„ V —Technical Education	36
„ VI.—Technical Education (continued) and Industrial Education	45
„ VII.—The Development of Cottage Industries	57
„ VIII —Research and Investigations	66
„ IX.—Intelligence and Technical Assistance	76
„ X.—Government Purchases	84
„ XI.—Pioneer Factories	94
„ XII —Financial Assistance	104
XIII.—Protection	112
„ XIV —Miscellaneous Measures	128
„ XV.—Labour Questions	137
„ XVI —Labour Legislation	150
INDEX	167

PREFACE

The following pages represent an endeavour to survey the relations between Government (including the legislatures) and industry in India since the introduction of the Montagu-Chelmsford Reforms. The period with which it deals primarily begins at the end of 1920, and as details are not in all cases available of the most recent developments, the account is ordinarily brought up only to the end of 1927. But these limits have been overstepped to some extent in two directions. Some account of the events preceding any period is necessary to an understanding of the events occurring in it, and in the present instance there are special reasons for referring in some detail to occurrences in the years immediately preceding the period under review. For the end of the war marked the beginning of a new chapter in India's economic history and the foundations of the policy which has governed State relations to industry in India since 1920 were based to a large extent on developments in the years 1918-20. At the other end, particulars have been added of the more important developments which have taken place up to the autumn of 1928.

The narrative is in no sense a critical survey. It does not ordinarily attempt to appraise achievement or to formulate conclusions. The aim has been to set out the policies adopted with the considerations that led to their adoption, and to give in some detail the developments which followed in practice. What is offered is a summary of the evidence, given as objectively as possible, and designed to place the reader in a position to form his own judgments on the decisions and events with which it deals.

For the material on which the narrative is based the writer is mainly indebted to official reports compiled by others. These are too numerous for individual acknowledgments, but particularly valuable assistance has been afforded by past and present Directors of Industries in the various provinces. Their published reports have been supplemented by several memoranda specially supplied to the writer, who has also had the advantage of oral discussions with them in a number of cases.

The State and Industry.

CHAPTER I.

Historical Introduction

It was for many years an accepted axiom in England and elsewhere that the greatest service which the State could render to industry was to "stand out of its sunshine." It was the duty of the State to establish and preserve that security in which alone industry can prosper. Having done this, and having secured a fair field for competition between man and man or between nation and nation, its functions ceased. For Government to regulate industry was pernicious, to assist it was futile and to participate in it was to waste public money. These doctrines had their origin in the protests of the classical economists against the misguided interference with trade prevalent at the beginning of the XIXth century, and the prosperity which followed their acceptance in England afforded, to the public mind the best proof of their universal validity.

In India, the tendency to question the axioms of Western thought became prominent about the beginning of the present century and there began a demand, which steadily increased that Government should take an active part both in the regulation of industry and in its advancement. It may indeed, be doubted if the doctrines of *laissez faire* ever commanded as complete an assent from Indian thought as they obtained in the West. In a previous age Indian industries had flourished round the thrones of the rulers and had looked to them for support, and the tendency in India has always been to expect from Government a more positive regulation of activity than has been usual in those countries where individualistic ideals have been dominant. It is, in any case, not surprising that there arose a school of thought which believed that the expansion of industry was one of the clamant needs of India and which urged that it was the duty of Government to secure that expansion.

Neither of these propositions gained immediate acceptance. The view that it was undesirable that India should develop industrially to any great extent was criticised both on economic and on social grounds. From the economic standpoint, it was urged that the industrialization of India was undesirable and that the diversion of capital from agriculture to industry would be unprofitable.

to the country. Others regarded industrialization as an evil mainly because of the social changes it brought in its train. Familiarity with European conditions brought recognition of the fact that the growth of industry had been far from an unmixed blessing in the West and Mr. Gandhi, in his attacks at a later date on all machinery and all machine-made goods, merely gave expression to what had long been the underlying belief of a numerous, if not vocal, group. But the bulk of Indian educated opinion was convinced that more rapid industrial progress was essential. This conviction may have been strengthened by an exaggerated view of India's manufacturing activity in the past and by questionable analogies from other countries. But it rested, in the main, on more solid foundations. Men accepted the dictum of the Indian Famine Commission of 1880 that "at the root of much of the poverty of the people of India, and of the risks to which they are exposed in seasons of scarcity, lies the unfortunate circumstance that agriculture forms almost the sole occupation of the mass of the population." And they recognized that apart from the economic advantages that were to be expected from the expansion of industry, it offered the promise of progress in other directions, scientific, social and political. With the wave of nationalism which marked the first decade of this century, enthusiasm for industrial advance became general among the educated classes. The Indian Industrial Conference, which began in 1905, gave a forum to the leaders of this movement and the *swadeshi* movement of 1907-08 was the most prominent effort of the popular mind to give expression to the new beliefs.

The acceptance by Government of the role assigned to it was not so easily secured, and it was not until after the outbreak of war that Government, as a whole, accepted responsibility for giving active assistance to industries. But efforts were made from time to time by individual administrators and administrations. In Madras, under the inspiration of Mr. (afterwards Sir) Alfred Chatterton, Government successfully developed, between 1898 and 1903, the aluminium hollow-ware industry. This pioneering effort was conducted at a small profit to Government and although the Government of India had remarked in 1900 that too much had been done in the way of its commercial development, the Secretary of State sanctioned, on their recommendation, proposals from Madras designed to secure the restoration, organization and development by official agency of technical trades and industries. Other activities followed, notably the introduction of chrome tanning, an enterprise which cost the local

translated into action. A successful exhibition was organized at Allahabad, grants were given to several enterprises, an experimental cotton-seed oil factory was established at Cawnpore and managed by a private firm on behalf of Government and a substantial loan was given for starting a sugar factory. A number of other loans were granted for industrial purposes, a policy strongly advocated by an important section of public opinion throughout India, which felt that the lack of capital had been a constant handicap to the development of industries and regarded it as a duty of Government to meet the need.

The adoption by provincial Governments generally of a forward policy appeared to be inevitable when an unexpected check occurred. Lord Morley who had in 1906 expressed doubts as to the value of the efforts made to create industries in Madras, refused in 1910 to accord his approval to the creation of a Department of Industries there, a step which had been taken in anticipation of sanction. In a published despatch he wrote—

“ I have examined the account which the Madras Government have given of the attempt to create new industries in the province. The results represent considerable labour and ingenuity, but they are not of a character to remove my doubts as to the utility of state effort in this direction unless it is strictly limited to industrial instruction and avoids the semblance of a commercial venture. So limited, interference with private enterprise is avoided, while there still remains an ample and well-defined sphere of activity. The limit disregarded, there is the danger that the new State industry will either remain a petty and ineffective plaything, or will become a costly and hazardous speculation. I sympathise with the conference and the Madras Government in their anxiety for the industrial development of the province, but I think that it is more likely to be retarded than promoted by the diversion to State-managed commercial enterprises of funds which are urgently required for the extension of industrial and technical instruction.

“ The policy which I am prepared to sanction is that State funds may be expended upon familiarizing the people with such improvements in the methods of production as modern science and the practice of European countries can suggest, further than this the State should

not go and it must be left to private enterprise to demonstrate that these improvements can be adopted with commercial advantage . . . My objections do not extend to the establishment of a bureau of industrial information or to the dissemination from such a centre of intelligence and advice regarding new industries processes or appliances provided that nothing is done calculated to interfere with private enterprise."

These orders resulted in the abolition of the Department of Industries as a separate Department in Madras. The tanning factory had been transferred to private ownership before they were received and a weaving factory was closed after their issue. In the United Provinces they resulted in the closing of the cotton-seed oil factory, and there was for a time a distinct check to official activities in similar directions elsewhere.

To the advancement of technical and industrial education there were of course no objections on grounds of policy. But although the importance of an advance in this direction was long recognized little was achieved for many years. Four engineering colleges had been in existence for a generation and had been successful in training civil engineers but these students mainly entered Government employment and did little to foster the industries of the country. In 1904 a step of some importance was taken in the institution of State scholarships to enable Indian technical scholars to secure training in Europe and America and assistance was given to a non-official association which sent a substantial number of scholars abroad. Within India technical and industrial schools multiplied after the opening of the XXth century and the annual expenditure of public funds on technical education, which was fixed at about 2½ lakhs in 1904 rose to 5½ lakhs by 1912, and increased rapidly after that date. The greater number of the schools were controlled by private bodies and aided by Government, a substantial minority were Government institutions.

But while success was not lacking in some cases, the progress made was generally regarded as unsatisfactory both by the public and by those engaged on the question. And both were responsible. On the side of the public, efforts were hampered by what the Industrial Commission described as the general acceptance of the fallacious idea that it was only necessary to provide facilities for the acquisition of technical knowledge to ensure the subsequent development of industries. Technical schools were started in centres where

(there were no industries, and no prospects of the development of industries. And while Congresses and Conferences passed frequent resolutions in favour of the advancement of technical education and individuals were ready with generous offers to help the cause, the most essential form of support—the presence of candidates—was too often absent. The adult educated public were alive to the importance of the subject but their sons were reluctant to enter upon courses involving manual labour, and it is only in recent years that the difficulties in this direction have shown signs of disappearing. One quotation will serve to illustrate a phase which has now passed —

“ The establishment of a technological institute for the United Provinces was one of the proposals of the Naini Tal conference. It was decided that it should consist of two parts. Classes in mechanical and electrical engineering were to be attached to the Thomason College. The department was opened in 1909 and took the place of a previously existing technical class. It was intended to attract a higher class of students, particularly those who had business connections and were destined to be managers or employers of labour. No candidates joined. A three fold division was then made, the highest department offering engineering and training in textiles, the second and third being on a lower plane and intended for mechanics. The engineering section has hitherto not drawn the right class of students. A whole-time textile instructor was engaged and plant was provided. It was found difficult to obtain any students with the necessary qualifications. The instructor resigned ”*

On the other hand, the public tended to place the blame on Government apathy. It is probable that the ineffectiveness of the attempts to tackle the problem was due more to inability than to apathy. Technical education was treated as a branch of general education and was entrusted to the regular educational authorities. They naturally concentrated on the literary type of education in which they possessed expert knowledge, and even when they realized the importance of technical education, their complete unfamiliarity with the needs of industry and the methods that should have been adopted made it almost impossible for them to guide the movement along practical lines.

*H. Sharp “Progress of education in India, 1907—1912”, Vol. I, page 177

With the growing interest of administration in the subject came the belief that progress in technical and industrial education could only be secured by entrusting it to special and independent authorities. The United Provinces Government, following the Naini Tal Conference, laid great stress on relieving the educational department of the control of technical education, the Ootacamund Conference accepted this view, so far as industrial education was concerned, and the more popular Madras Conference of the same year was, as has been indicated quite emphatic on the question. The Government of Eastern Bengal and Assam advocated the transfer from the Department of Education of all forms of technical and industrial education. But here again the views of the Governments concerned failed to receive Lord Morley's approval. In the case of the United Provinces, while agreeing that the officer responsible for the new Department should be in direct communication with Government as regards industrial enquiries, he directed that in respect of his supervision of industrial schools he should report to the Educational Department. In Madras, in the despatch already cited, Lord Morley issued orders that the officer responsible for Industrial Education "should be made subordinate to the Director of Public Instruction."

Lord Morley's orders evoked considerable opposition. The opposition was directed chiefly against the ban placed on the pioneering of industries by Government, but the orders relating to industrial education also received adverse criticism. A strong protest was made by the Indian Industrial Congress and in February 1911 the Madras Legislative Council adopted a resolution inviting the Secretary of State to reconsider his decision and the proposals of the Local Government were supported by the Government of India. Lord Crewe, while he adhered to Lord Morley's views on the inadvisability of any trading by Government on commercial lines suggested that an unduly narrow construction had been placed on his predecessor's orders, and stated that he had no objection to the demonstration by Government of improved machinery or new processes. He was moreover prepared to consider the transfer of "trade" schools to the Director of Industries. The Department of Industries in Madras was accordingly reconstituted in 1914. It commenced experimental work on the old lines and became responsible for the control and inspection of industrial schools. Several schemes of importance were taken up in other provinces but before much could be done the war brought about an entirely new situation.

The Great War was destined to result in a period of unprecedented prosperity for the leading industries of India.

But the immediate effect of the outbreak of war was a dislocation of India's markets. Important European markets for raw materials were closed or greatly restricted and the shortage of shipping placed further difficulties in the way of producers. As regards imports, the position was similar. Some European countries were unable to export to India, all were compelled to reduce production and had difficulty in securing freight for their products.

The contraction of commerce with the West served to bring home in a striking manner the extent of India's economic dependence on Europe. So far as materials were concerned, her list of deficiencies, as the Industrial Commission pointed out, was surprising. Electrical plant and equipment, essential accessories of the textile and mining trades, all kinds of machine tools, boilers and steam, oil and gas engines, were all imported. There was not a machine to make nails or screws, and even agricultural implements were mainly imported. Nor was the dependence confined to materials; a constant supply of western experts was essential and a number of opportunities were lost when they were not forthcoming. Again, in respect of capital, India depended largely on outside assistance and it was not until after the end of the war, when the opportunities were disappearing and the risks were multiplying, that Indian capital appeared to be losing its customary shyness.

With the progress of the War, Government received an entirely new and powerful stimulus from her own needs. For the war compelled her to enter the markets on an unprecedented scale, and her necessity was such that she could no longer afford to wait until private enterprise rose to the occasion. The development and the inception of industries with State assistance or under State management became essential if India was to meet the demands arising out of the War.

Finally, the continuance of the war presented Indian manufacturers with an opportunity of a kind unknown before. On the one hand there was a big demand for manufactured goods, enhanced by the exceptional requirements of Government. On the other hand, the restriction of imports gave producers in many directions a degree of protection from foreign competitors such as only an extremely high tariff could afford in normal times. After the first depression had passed, trade entered on a period of increasing prosperity, development and expansion became general and if only some of the advantage gained could be conserved, there was every prospect that the war would see a big advance in the industrialization of India.

CHAPTER II

The Industrial Commission

The creation of an unprecedented opportunity and the emergence of an unprecedented need led the Government of India in 1915 to a general survey of the position, as a result of which they became convinced of the necessity for a definite industrial policy for India as a whole. No such policy had existed hitherto such efforts as had been made had generally owed their inspiration to the enthusiasm of individuals rather than to any consistent purpose on the part of Government. Expert assistance was scarce and the efforts of the experts available lacked co-ordination, while the experience gained in one province was not easily available to another. Although the problem was much more than a local one, there was no single authority able to envisage it as a whole, and even in the same province different authorities were responsible for different branches of activity closely connected with industries.

The deliberations of the Government of India resulted in the appointment, with the approval of the Secretary of State, of the Indian Industrial Commission in May 1916. The Commission had as its President Sir Thomas Holland, K C I E, F R S, a former Director of the Geological Survey of India and the President of the Institution of Mining Engineers. The seven members who remained throughout the Commission's deliberations included four men who had taken a prominent part in Indian industry. The Commission was instructed—

- “to examine and report upon the possibilities of further industrial development in India and to submit its recommendations with special reference to the following questions—
- (a) whether new openings for the profitable employment of Indian capital in commerce and industry can be indicated,
 - (b) whether and if so in what manner Government can usefully give direct encouragement to industrial development—
 - (i) by rendering technical advice more freely available,
 - (ii) by the demonstration of the practical possibility on the commercial scale of particular industries,

- (iii) by affording directly or indirectly financial assistance to industrial enterprises , or
- (iv) by any other means which are not incompatible with the existing fiscal policy of the Government of India "

With regard to the limitation involved in the last clause, the resolution appointing the Commission explained that the question of imposing duties for the specific purpose of protecting Indian industries would not be examined until after the end of the war

The Commission undertook a comprehensive survey of the position and presented their final report in 1918. A bald summary of their recommendations would occupy many pages and it is not possible here to give more than the merest outline of the scheme which they formulated for the expansion and development of Indian manufactures. Two fundamental principles underlay the recommendations of the Commission, " first, that in future Government should play an active part in the industrial development of the country , secondly, that Government cannot undertake this work unless provided with adequate administrative equipment and forearmed with reliable scientific and technical advice ".*

The main activities of Government in respect of industries were to include (1) research, (2) industrial and technical education, (3) commercial and industrial intelligence, (4) direct assistance, technical and financial and (5) the purchase of stores. That Government was not equipped for the task indicated was obvious and the problem, as it presented itself to the Commission, was largely one of organization. The machinery which they proposed to set up included central and provincial departments of industries, manned largely by all-India scientific and technical services. A brief indication of the functions of the main units of the organization will illustrate the methods which the Commission advocated.

The provincial Departments of Industries to be set up in ten provinces† already existed, in most cases, in embryo, but they were to be entrusted with much wider functions and supplied with much larger staffs. At the head of each Department was to be a Director of Industries who would also act as Secretary to Government and as adviser to Government in matters relating to trade and commerce. He was to be assisted by a Board, to be composed mainly of non-officials. The staff of the Department was to include industrial

*Despatch from the Secretary of State to the Governor General in Council, No 86-Revenue of 25th September 1919

†The nine major provinces and the North-West Frontier Province

engineers chemists various specialists in industry and teachers. This staff would be engaged in various scientific researches connected with industries to be carried on at well-equipped institutes and laboratories, and it would be responsible for conducting and supervising technical and industrial education and would participate in technological education. The Commission's proposals involved a large increase in and the reorganization of industrial education. The provincial departments were also to be responsible for the collection of information, statistical and general regarding industries with a view to its supply to Government and the public. The Departments were thus to be equipped to provide industrialists and *entrepreneurs* with technical advice and economic and scientific data. In addition the provincial departments would be mainly responsible for the more direct forms of assistance to industry advocated by the Commission. In the case of the cottage industries, assistance could be given in many ways—by demonstration factories and periodic demonstrations, by the introduction of better tools and plant, by instructional classes, by loans, by the improvement of designs and of marketing. To further the smaller organized industries the establishment of pioneer factories was advocated. the duty of the department in this case was to carry on the work on a small commercial scale in order to ascertain the actual difficulties and to discover whether the industry could be made to yield a profit. The industrialist would be assisted to maintain his works in good condition and he would in some cases get direct financial aid from Government in the form of loans, guarantees of dividend, undertakings to purchase the output or subscriptions of share capital. A scheme was also outlined on which industrial banks would lend money to enterprises approved by the Director of Industries. Direct assistance to the larger organized industries might take the form of conducting preliminary investigations into raw materials, economic conditions, markets, etc.

But the programme was not to be framed on a provincial basis: a national programme was essential. Without the co-ordination of the work of the enlarged provincial departments, there was an obvious danger that much of their efforts might be misdirected, that there might be overlapping and that, as in the past, experience would not be pooled. If India was to obtain adequate results from the expanded departments their work must be based on a definite policy, framed with regard to the needs of India as a whole. Further there would be many individual problems of importance particularly in the case of the larger industries, which could hardly be tackled by a Department that was provincial in its activities. It was essential therefore to establish an Imperial Department of Industries and the Commission

proposed the creation of such a department administered by a Member of the Viceroy's Executive Council and a Board of three Members and assisted by a number of qualified experts and an administrative staff. This Department, to quote the Commission, "would control the administration of the various Acts with which it is concerned, and would be responsible for the general direction of the accepted industrial policy of the country, including technical and industrial education. The remaining duties of the department would consist of the initiation and running of any imperial pioneer and research factories that may be needed, the management of full scale Government factories, the framing of schemes for assisting private enterprise of a class for which an imperial agency would be required, the supply of stores, the collection and dissemination of commercial and industrial information, and the direction of such scientific and technical services and departments as come under its control."

The discharge of the functions both of the central and provincial Departments would thus depend largely on the provision of a large fully qualified scientific and technical staff. The Commission recommended that this staff should be organized in all-India services. The scientific experts—chemists, botanists, bacteriologists, zoologists, entomologists, would be organized in scientific services, the creation of an Indian Chemical Service being regarded as most urgently required. The various industrial experts, engineers, inspectors, etc., would be combined in an Imperial Industrial Service. The Commission were profoundly impressed by the confusion existing in the organization of scientific experts in India and the waste of effort which resulted from this confusion. All over India men were working in isolated posts, with little contact with other scientists, often in subordination to men ignorant of the subject in question, and frequently unable to specialize closely because of the variety of questions on which they might have to advise. A system of services would overcome these difficulties. It would ensure that the work of scientific officers was co-ordinated and supervised, it would permit of close specialization and the prospects open to members of an all-India service would attract men of a type which Local Governments, recruiting for isolated appointments, could scarcely hope to secure. The services would be under the general control of the Central Department of Industries, but as in the case of the other all-India services most of the officers would work under the immediate control of the Local Governments, in the provincial Departments.

One further important recommendation should be mentioned—the creation of an organization for the purchase and inspection of Government stores in India. This agency was to work partly under

the Central Department and partly under the provincial Departments of Industries and an expert committee was to be appointed to work out the details. A special committee was also to be appointed to formulate proposals for the formation of the chemical service and the organization of chemical research. The Commission also recommended surveys of actual and potential sources of power and particularly coal and water power. The Commission made a number of recommendations in connection with various Acts and dealt briefly with the question of the welfare of industrial labour.

While the Industrial Commission was conducting its investigations a Government organization of a new type brought the State into close relations with organized industry and had an important influence in stimulating industrial development. The Commander-in-Chief suggested at the end of 1916 the creation of an organization to develop the supply from Indian sources of materials required for war purposes and the Indian Munitions Board came into being in February 1917. Its functions were "to control and develop Indian resources, with special reference to the needs created by the war, to regulate contracts to limit and co-ordinate demands for articles not manufactured in India and to apply the manufacturing resources of India to war purposes, with the special object of reducing demands on shipping." The Board consisted of the President Sir Thomas Holland who was at the time President of the Industrial Commission and three members and with its technical and administrative staff it represented in embryo the Department of Industries later advocated by the Commission. Its activities were numerous and a number of them had a direct influence on the development of indigenous industries.

From the point of view of industrialists the most important function of the Board was its control of Government purchases. In the first place the Board was responsible for the supply of all articles except food-stuffs, medical stores and certain technical stores to all the armies operating in the East. It had thus an immense purchasing power: for example the textiles branch was at the end of the war making purchases at the rate of two crores a month and at one time about a crore a month was paid for Indian hides and leather. But in addition to controlling the purchase of war material, the Board scrutinized all indents from Government departments and railways and by means of its ability to withhold or grant recommendations for priority in respect of freight it was enabled largely to control the disposal of these indents. It was thus in a position to divert from Europe to India a large number of purchases. Priority was generally refused when the article or a suitable substitute could be purchased

locally, or when arrangements could be made for its manufacture in a reasonably short time. The opportunities so created were brought to the notice of manufacturers, with the result that a large number of new branches of manufacture were started.

At the same time the Board, with the assistance of its representatives in the provinces, was in the position to act as a bureau of industrial information for manufacturers and others contemplating innovations in production. Expert assistance was available in many subjects and steps were taken, by the encouragement or institution of researches to investigate fresh possibilities. Thus a number of chemical researches were conducted under the auspices of the Board, following a conference of chemists in 1918. Special attention was given to the development of the manufacture of accessories for the more important industries. The exigencies of the war, moreover, led to a substantial expansion in direct manufacture by Government. Under the Board's control, the ordnance factories were greatly extended, a new factory for the manufacture of acetone was started, while army clothing and leather goods were manufactured on a scale never previously contemplated. At its maximum the Army Clothing Department turned out in one month 45 times its average pre-war monthly production of garments.

The work of the Indian Munitions Board naturally coloured the views of the Industrial Commission and influenced their recommendations. They described it as "a practical anticipation of many of the conclusions which had been forced upon us by evidence" and remarked that it "became, in effect, an experiment on a large scale designed to test the value of many of our conclusions regarding not only the manufacturing capabilities of the country but also regarding the kind of administrative machinery most suitable to carry out our proposals". The report was presented in October 1918, and the first important step taken in accordance with their recommendations was the conversion of the Munitions Board, whose main work ended with the conclusion of hostilities, into an organization capable of undertaking the duties assigned by the Commission to the Central Department of Industries. It was not possible, prior to the amendment of the Government of India Act, to add another Member to the Viceroy's Council but the Government of India proposed, as an interim measure, that the Board which was now to be designated as the Board of Industries and Munitions should be modified in structure and placed, through its President, directly under the Viceroy. This proposal was approved by the Secretary of State in September 1919, when he accepted the fundamental principles underlying the Commission's recommendation, and agreed to a policy involving the acceptance of

active participation by Government in industrial development as one of the legitimate functions of the State. He added that in giving effect to the policy advocated by the Commission "State assistance will take various forms such as research, the survey of natural resources, technical and scientific advice, educational facilities, commercial and industrial intelligence, the establishment of pioneering and demonstration factories, financial help, the purchase of Government stores in India, whether in the usual way of business or under a guarantee of purchase over a fixed period, and probably also fiscal measures."

Prior to this date Local Governments had been consulted on the Commission's proposals and had given them general approval. On all the main proposals, indeed, there was almost complete unanimity. Directors of Industries had already been appointed in most of the major provinces, but their departments were not equipped to fulfil the large programme assigned to them by the Commission. Although there was a distinct tendency on the part of the public to criticize the proposals for the new all-India services (which had failed to secure the assent of one member of the Commission, Pt Madan Mohan Malaviya), the necessity for these services was generally accepted by Local Governments. One Government was opposed to the creation of an industrial service, none opposed the creation of the scientific services. There appeared indeed to be fairly general agreement among Local Governments that the carrying out of the policy advocated by the Commission required the type of machinery which the Commission proposed.

The next step was the working out of the details of the organization and a beginning was made with the proposal for a Chemical Service. Following the Commission's recommendation the Government of India appointed in the autumn a Committee to consider whether an all-India Chemical Service was the best method of attaining the ends which the Industrial Commission had in view, and to frame proposals for the organization of industrial research. The Committee was also to work out proposals for the constitution of a Chemical Service if it approved the creation of such a service. The Committee had as its President Professor Jocelyn Thorpe, C B E, F R S, of the Imperial College of Science and Technology. Of the six other members, five were chemists of distinction and all were acquainted with Indian conditions.

The Chemical Services Committee presented its report in February 1920. With the exception of Sir P C Ray, the members were agreed that a Chemical Service should be established having as its primary object the encouragement of industrial research and deve-

lopment The Committee had apparently little hesitation in reaching this conclusion which was supported by a large proportion of the written evidence, and the President observed—

“ During the tour it soon became apparent that the development of the Chemical Industries of India could only be adequately realised through the agency of an efficient Government Chemical Service Very few of the great natural resources of the country were being exploited to advantage and where, here and there, this was being done the processes employed were often crude and wasteful It was evident that if the resources of the country were developed to their fullest extent, India would take her place in the front rank of industrial communities and would benefit by all the advantages that this implies

In the Provinces visited, there was no lack of appreciation of this fact, but the main trouble seemed to be the absence of any effective organization to advise and co-ordinate the various efforts which were being made to meet the situation Moreover, although the need was clear to them, none of the Provinces had as yet formulated a programme of their requirements nor had they decided what educational methods were necessary to achieve the desired ends ”

The Committee recommended the organization of a series of research institutes to be established at the chief centres of industry in each province, which were to work on chemical problems relating to industry and to develop new industries Each would be under a Director of Research subordinate to the Local Government, but their work would be co-ordinated by a central research institute at Dehra Dun whose primary function would be the creation of new industries and the development of new processes “ up to the ‘ semi-large ’ scale or further if necessary ” The central institute would be in charge of a Director-General of Research who would control the Chemical Service and who would be assisted in the Institute by four Deputy Directors in charge of Departments

Professor Ray, while indicating that he was in substantial agreement with the major portion of the report, opposed strongly the creation of the Chemical Service He wrote “ I consider that the days of Government Services are over and that the development of industries by the agency of a Government Service is not the most suitable way of dealing with the problem ”

CHAPTER III

Constitutional Reforms

The presentation in 1920 of the reports of the Chemical Services Committee and of the Stores Purchase Committee whose recommendations will be considered later may be said to have marked the completion of the scheme whose framework had been prepared by the Industrial Commission. But before it could be put into execution a new factor had made a fundamental change in the situation. This was the introduction of the reformed constitution.

The Industrial Commission had been appointed before the famous declaration of August 1917 regarding self-government for India and they had finally approved their report before the appearance of the Montagu-Chelmsford report on constitutional Reforms. Their scheme therefore was framed on the basis of the system of Government as they knew it and could not take account of the uncertain changes ahead. In a postscript they stated that they were unable to re-examine their conclusions and recommendations in the light of the reform proposals without incurring undesirable delay. And they added. It is evident however that our scheme is in general accord with the administrative changes proposed by His Excellency the Viceroy and the Secretary of State.

The Montagu-Chelmsford report indeed contained a definite affirmation of the principles underlying the Industrial Commission's scheme. After recording their conviction that economic factors entered largely into the political situation in India the authors of the report discussed the weakness of India's economic position, the strength of Indian feeling in favour of official action, and the considerations of policy which justified the adoption of a new position. On the broad question of policy they wrote. We have observed elsewhere that English theories as to the appropriate limits of the State's activity are inapplicable to India. We believe that this is true in the case of industries and that if the resources of the country are to be developed the Government must take action. ' We are agreed they added ' that there must be a definite change of view and that the Government must admit and shoulder its responsibility for furthering the industrial development of the country. The difficulties by this time are well known. In the past and partly as a result of recent *swadeshi* experiences India's capital has not

generally been readily available, among some communities at least there is apparent distaste for practical training, and a comparative weakness of mutual trust, skilled labour is lacking, and although labour is plentiful, education is needed to inculcate a higher standard of living and so to secure a continuous supply, there is a dearth of technical institutions, there is also a want of practical information about the commercial potentialities of India's war products. Though these are serious difficulties they are not insuperable, but they will be overcome only if the State comes forward boldly as guide and helper." After observing that, if the speculative element in Government activities in respect of industries was to be minimized, there must be a marked expansion of the technical services, they referred to the Industrial Commission's policy in the following terms —

"The Industrial Commission has not yet submitted its report. But we understand that it is likely to lay stress on a substantial increase in the scientific and technical services of the country and their organization under a separate department of the Government of India. We understand that it is suggested that the new Department should control the purchase of Government stores and the administration of ordnance factories, and thereby be brought into active touch with industrial development all over the country. We do not wish to anticipate discussion of the Commission's proposals. But we may say that our own inquiry leads us to believe that there are many questions of importance waiting to be taken up by a new agency, and sufficiently related to each other to form the matter for a new administrative unit. We believe that they are also regarded by the public as sufficiently important to be separately recognized. It has been left for the war to bring out fully the need for advance in the industrial sphere as in the sphere of politics. But in any case we can see no reason for hesitating to move forward boldly in a matter in respect of which considerations of military security, political expediency and economic advantage are coincident, and are in agreement also with the interests of the Empire as a whole."

In the illustrated list of provincial subjects appended to the Report the development of arts and crafts and local industries "was shown as a provincial subject and marked as one that might suitably be transferred. Technical education was placed in the

same category. It was evidently the view of the authors of the report that the development of industries which could not be regarded as local should be a central subject and this, and their acceptance of the fundamental principles underlying the Industrial Commission's report appeared to justify the conclusion of the latter body that their scheme was in general accord with the reform scheme.

But from another point of view there were strong reasons for regarding the two schemes as essentially inconsistent. Thus Mr (afterwards Sir) Charles Innes discussing the Commission's report in January 1919 wrote—

“ It must be clear to any one who reads the report carefully that throughout it is centralizing in tendency, and though the Commission claims that its scheme is ‘ in general accord with the administrative changes ’ proposed in the Reform Scheme, and though in paragraph 340 of the Reform report, the Viceroy and the Secretary of State certainly give the proposals of the Commission a preliminary benediction, I confess that I do not think that it is possible to square the proposals of the Commission with the second of the four formulæ laid down in paragraphs 188—191 of the Reform report * It may be admitted that industrial reform is essentially complementary to political reform, but it is equally evident that we have two antagonistic forces at work. The Commission is concerned solely with India's industrial deficiencies, and deliberately it has set itself to devise the most efficient way of remedying those deficiencies. The reform scheme, on the other hand of set purpose, is prepared to sacrifice efficiency to other and wider considerations. Hence the one scheme hinges on centralization and efficiency, the other on decentralization even at the expense of efficiency. Ultimately therefore the decision depends on the view taken regarding India's industrial position. If the Commission is right in holding that India's backwardness in industrial development

* For, “ The provinces are the domain in which earlier steps towards the progressive realization of responsible Government should be taken. Some measure of responsibility should be given at once, and our aim is to give complete responsibility as soon as conditions permit. This involves at once giving the provinces the largest measure of independence, legislative, administrative and financial, of the Government of India which is compatible with the due discharge by the latter of its own responsibilities ”

is so serious as to involve political, economic and even national danger it is justified in asking local Governments to agree in the interests of efficiency to a period of centralized control.”*

It should be added however that this point of view was not at that time universally accepted. The President of the Commission pointed out that the Commission had been careful to avoid the word “centralization” and stated that such centralization as it contemplated was a centralization of advisory functions. And Mr (afterwards Sir) Ernest Low, who had been an official member of the Commission and was deputed to discuss their proposals with local Governments, was able to reassure local Governments on the question of centralization. Thus the Madras Government wrote—

“It would appear from the official summary of the report that the Commission proposes to lay on the Imperial Department of Industries the responsibility for the ‘Industrial policy of Government and the inauguration and carrying out of a *uniform programme* of industrial development throughout the country’. The functions of the Imperial Government as set out in paragraph 214 of the Commission’s report include a duty to watch over provincial administrations in order to secure the maintenance of a *uniform industrial policy*’. The expression ‘*uniform programme*’ is somewhat vague and suggests considerable interference with the programmes of provincial Governments. The Madras Government however understand that the expression need not necessarily be interpreted as indicating any intention on the part of the Commission that the Imperial department should interfere otherwise than by suggestion and advice in matters within the competence of the Local Government. Mr Low has informed this Government that the Commission’s intention was merely to ensure that one provincial Government should not lag behind the others in industrial development and that if one link in a chain was lacking the Government of India might endeavour to persuade the provincial Government concerned to supply the link or, failing local enterprises the deficiency

*Letter written to Director of Industries, Madras and published in correspondence relating to Industrial Commission’s report appended to Commerce and Industry Department Resolution No 81-D of 15th November 1919

might be supplied by the Imperial department. In view of this explanation the Governor in Council accepts the proposals of the Commission in this respect.”*

At a later date the Chairman of the Committee which advised on the allocation of functions to the central and local Governments, speaking of the Industrial Commission's report, said “the terms of the Report were not perhaps perfectly clear in some places as to whether it was contemplated that the Indian Department of Industries would have the power of command and control, or only be a source of advice. As interpreted to us by Sir Thomas Holland the idea was that they should rely on such control as they would obtain over Provincial activities through the excellence of the advice they would be able to give.”

It is not now possible to say what would have been the outcome of the Commission's report had the reforms not intervened. In respect of technical education, they made it clear that the functions of the Central Government's officers would be purely advisory but it is difficult to believe that in other directions their aims particularly “the maintenance of a uniform industrial policy” could have been fully achieved without a Central Department which was in a position to exercise control otherwise than by the excellence of its advice. And apart from the question of control it was undoubtedly the intention of the Commission that the Central Government should be in a position to incur where necessary heavy expenditure on the development of industries. It is not surprising therefore that the bulk of Indian opinion saw in the Commission's scheme a definite move towards centralization. Indeed the United Provinces Council adopted a resolution introduced by Mr. Chintamani (afterwards Minister for Industries in the United Provinces Government) which affirmed not merely that local Governments should be given full liberty of action in respect of the development of industries and that the proposed new services should not be created, but recommended also that no portfolio for industries should be created in the Viceroy's Council.

The demand that industrial development should be entrusted to ministers in the local Government was fairly general. The subject was one in which public opinion was keenly interested and it was believed that if a big advance was to be made ministers would be likely to show more enthusiasm and secure more support than the Government of India or the reserved sides of local Governments. The Functions Committee's proposals were in accord with the popu-

*Correspondence relating to Industrial Commission's Report.

lar view, for they recommended that the "development of industries, including industrial research and technical education" should be a provincial subject and should be dealt with on the transferred side of the Government in all provinces. Evidently referring to the division suggested in the Montagu-Chelmsford Report, they added that they had been "unable to draw any dividing line between 'local' and other industries." "Central institutions of scientific and industrial research" appeared in the proposed list of all-India subjects, and also the control of mineral development (but not the development of Government mineral resources).

In spite of the allocation of the subjects last mentioned, the proposed distribution seemed to make it impracticable to proceed with the Industrial Commission's policy. For it would scarcely be possible for them to spend money directly on industrial development, and they could not maintain, except in institutes, the expert staff which was essential if they were to advise and guide the provinces. Further, with the assignment of the subject in the provinces to ministers, it would become impossible for the Central Government to fulfil the function of "the maintenance of a uniform industrial policy", assigned to it by the Commission. The Government of India accordingly felt bound to oppose the recommendation. Their conclusions were that the development of industries should be concurrently undertaken by the local Governments and the Government of India, and that the subject should be reserved. In this subject they included industrial education.

Their arguments for giving the Government of India responsibility for the subject were given in the following paragraph from their despatch to the Secretary of State —

"In the first place we hold that the central Government cannot possibly divest itself of responsibility for the industrial progress of the country, which is necessary to secure its military safety, its freedom from outside economic aggression, and its social and political stability. The Government of India's control of railways, tariffs, foreign trade relations and intelligence, the central scientific industries and such services as the geological survey, further emphasises their responsibility in respect of industries. That responsibility should, we think, be discharged by furnishing advice and help to local Governments, by co-ordinating their efforts and by working concurrently with them, rather than by direct control. Secondly, the expenditure on many of the measures necessary for industrial progress is very high. Research and industrial

experiment are exceedingly costly in proportion to their results in any one part of the country, without a large and highly specialized technical and scientific staff, mere administrative effort will be barren, nor are either the finances or the requirements of local Governments extensive enough to enable them to give appreciable assistance to large enterprises by loans, guarantees or undertakings to purchase products. The scale of some of the individual enterprises which have recently been started in India was probably not fully present to the minds of the committee when they made their recommendation. Thirdly, experiments, often on a commercial scale, will have to be undertaken if dangerous gaps in our economic armour are to be closed, and essential links in the industrial chain are to be forged, while there is yet time. There must be a central authority responsible for seeing that this is done, and such authority must command finances sufficiently large and sufficiently elastic to enable them to do the work themselves, if necessary. Finally, a central agency equipped with a full scientific and industrial staff, is needed to help and advise local Governments, to co-ordinate their efforts, to pool their experience and to set the pace of the advance.*

Further arguments were adduced against the transfer of the subject within the provincial field.

Mr Feetham who had presided over the Functions Committee and Mr (afterwards Sir) Hugh Stephenson, a member of the Committee discussed these views in some detail in a Memorandum laid before the Joint Parliamentary Committee on the Government of India Bill. They said that the Functions Committee considered that the inclusion of central research institutions in the all-India list would enable the Government of India to make experiments on an industrial scale and to maintain scientific industrial services. And they observed that "the intention of the Committee was to entrust the provinces with sufficient power to secure development of their own industries, while giving the Government of India full scope in matters which could not be dealt with by individual provinces and in their proposals they were largely guided by the report of the Indian Industrial Commission and a note forwarded to them by Sir Thomas Holland, whose views are expressed in his formula 'For executive functions decentralise to the fullest extent, prompt

*Fourth Despatch on Constitutional Reforms, dated April 16, 1919, paragraph 117

action on the spot guided by an intimate knowledge of local conditions must ordinarily be better than deferred action no matter how perfect be the advice on which it is based. *For advisory functions* centralization in a country like this, which is practically devoid of technologists, is more than usually important."

On the main question they stated that the Committee "were impressed by the strength of the desire that industrial development, on which the future of India so much depends, should rest in the hands of the representatives of the people." Dealing with the argument that untrained Ministers would have to administer a new subject without an established staff, they pointed out that the Industrial Commission proposed the creation of all-India Scientific Services and an Indian Industrial Service and added that if these proposals were accepted the weight of this objection would be greatly diminished.

In the Joint Select Committee the authors of this memorandum gave evidence and considerable attention was given to the question. The authors of the memorandum maintained that the proposals made were not inconsistent with the terms of the Report of Industrial Commission, as interpreted by the President of that Commission. Certain modifications were made in respect of industrial subjects before the rules were finally promulgated. Thus a new central subject was inserted, *viz*, "Development of industries, in cases where such development by central authority is declared by order of the Governor General in Council, made after consultation with the local Government or local Governments concerned, expedient in the public interest." The Government of India were also entrusted with "Control of mineral development, in so far as such control is reserved to the Governor General in Council under rules made or sanctioned by the Secretary of State, and regulation of mines." And the development of mineral resources in the provinces became a reserved subject. But the development of industries, including industrial research and technical education, became a transferred subject in all provinces, and with the introduction of the Reforms at the end of 1920 the main responsibility for the development of industries by official agency passed to the newly appointed Ministers.*

The general result was a separation of the spheres of influence of the Central and Local Governments in respect of the development of industries. The adoption of a policy of protection was, at

*In Burma the reforms were not introduced until the beginning of 1923. In the Central Provinces there were no Ministers between 1924 and 1927, and there were no Ministers in Bengal for the greater part of the same period.

a somewhat later date, to place the Government of India (with the concurrence of the Central Legislature) in a position to assist industries substantially. They were also able to exercise some influence on the development of industries by means of their purchasing activity. In all other directions their power to advance the industrial progress of the country was restricted. Local Governments on the other hand, were unable to adopt protective policies and the comparatively small extent of their own requirements of stores made it difficult for them to do much by way of purchases. In other directions the powers which they could exercise with the concurrence of the provincial legislatures were, in theory at least, almost unlimited. But they had to face serious financial difficulties and the two features which the Industrial Commission had regarded as the chief obstacles to progress, *viz*, "the lack of a definite and accepted policy and the absence of an appropriate organization of specialized experts" remained after the Reforms. Local Governments which (on the transferred sides) were independent of each other and of the Central Government, could hardly be expected to frame their policy with a view to extra-provincial needs, particularly as no "uniform industrial policy" had been evolved under a unitary system of Government. And it was equally difficult for Governments so constituted to accept the "appropriate organization of specialized experts" which was an essential part of the Industrial Commission's programme. As the succeeding chapters will indicate, much was achieved despite these difficulties, but the element of co-ordination was necessarily weak, and in consequence it was not always possible to secure the fullest results from the efforts which were made.

CHAPTER IV

Organization

In the meantime, the Board of Industries and Munitions had embarked on the endeavour to fulfil some of the functions assigned to the Central Department of Industries by the Industrial Commission's Report. While it was engaged in winding up the work of the Indian Munitions Board it essayed to deal with the new questions to which the Commission had called attention to guide the lines on which official policy in the provinces was to develop and to co-ordinate the work of the provincial departments. A branch was maintained for the purpose of dealing with industrial intelligence and in May 1920 a Labour Bureau was established to deal with labour questions. Important schemes such as the establishment of a Stores Department and the construction of an Indian School of Mines were taken up in consultation with local Governments. A sum of over a lakh was spent on the acquisition of land at Dehra Dun for a Central Chemical Research Institute.

In the provinces also endeavours were made to organize on the lines approved by the Industrial Commission. Madras and the United Provinces had Industries Departments before the Commission was appointed and in Bengal and Bombay Directors of Industries were appointed in the latter half of 1917. In Bengal however the permanent appointment of a whole-time Director dates from 1920. In 1918 Departments were formed in Assam and in the Central Provinces but in these provinces the Directors of Industries were not and are not now full-time officers. In Bihar and Orissa and in the Punjab Departments were created in 1920 and in Burma the Department of Industries commenced work early in 1921. The Industrial Commission had recommended that the Director of Industries should have the position of a Secretary to the local Government for industrial subjects but this recommendation was not accepted. At a later date the same officer held the appointments of Secretary to Government and Director of Industries in Bihar and Orissa, but the combination was effected mainly for reasons of economy and this arrangement is no longer in force.

With a view to co-ordinating provincial efforts a Conference of Directors of Industries was convened at Simla in April 1920. It was attended by the President and Members of the Board of Industries and Munitions officials from all the major provinces including eight Directors of Industries and a number of other officers dealing with industrial subjects. The more important questions discussed related to the organization of the growing provincial

departments and the machinery by which the new policy was to be carried out. Although it was known by this time that industries and technical education would be transferred to the care of Ministers the provincial representatives present at the Conference were all agreed as to the desirability of constituting an Indian Industrial Service.

It could of course be argued with some cogency that there was nothing inconsistent in the control of policy in respect of the development of industries by Ministers and the execution of that policy by means of all-India Services. In England Ministers have little influence on the selection of the personnel of the public service working under them and in India Ministers were entrusted with the control of other Departments whose superior staff was composed mainly or exclusively of members of an all-India service. It was moreover clear that the creation of services such as the Industrial Commission contemplated would largely diminish in some directions the serious difficulties which faced those Ministers who had to embark on a new programme and mention has already been made of use of this argument before the Joint Select Committee to support the proposal for the 'transfer' of industries.

But this view did not take sufficient account of the position in India and of public opinion on the question. In the first place there was clearly something anomalous in transferring responsibility for certain subjects to provincial Governments and creating at the same time to deal with these subjects new services whose pay conditions of service etc., would be determined by an authority in no way subject to these Governments. More important than this was the fact that to the Indian public all-India services were inseparably associated with the older form of Government and with the control of policy by an authority superior to the local Government. The fact that such services had been up to that time predominantly European emphasized their connection with the older regime and strengthened the anxiety not to add to their number. Pt Madan Mohan Malaviya in the minute he appended to the Industrial Commission's report had already voiced a fear which was shared by a considerable section that the new services if created might for a long time remain practically the monopoly of Europeans. And it was a very common view that apart from this danger all-India services were not compatible with responsible provincial Government; some indeed regarded all the services as an anachronism in the new conditions*.

*See for example, Sir P. C. Ray's minute of dissent to the Chemical Services Committee's report.

The principle of an all India Industrial Service had been accepted by the Secretary of State in September 1919, when he had also approved the proposal to create Committees to consider the Industrial Commission's recommendations regarding the scientific services. And, as already mentioned, the proposal to form both the Industrial and the Chemical Services had been approved by local Governments. But no active steps were taken to form the services, and further progress was left until after the Reforms were in operation. This was a wise decision for, although the recognition of the fact at the time seems to have been a little imperfect, it was almost inevitable that Ministers would be opposed to the formation of new services of the type proposed. Indeed, an indication of the coming re-orientation of policy was available before the Ministers were appointed. For when, in the latter part of 1920, a number of local Governments replied to a request from the Government of India for their views on the Chemical Services Committee's report, there was a tendency to question the wisdom of creating a Chemical Service and even the Governments in favour of going on evinced little enthusiasm for the proposal.*

As a number of replies had been sent before Ministers had been appointed, it was decided to postpone action until the Ministers generally were in a position to give their views, and the subject was brought up before the Third Conference of Departments of Industries, held at Simla in May 1921. This Conference was attended by seven Ministers dealing with industries and eight Directors of Industries and devoted a long discussion to the question†. Sir Thomas Holland made a strong appeal for the creation of a Chemical Service. But although it was readily admitted that there were some advantages to be gained from such a service, the general view was on the whole critical. In the end it was decided to postpone a final conclusion in order to give local Governments an opportunity to review the position in the light of the discussion which had taken place. A similar decision was reached as regards the Industrial Service. The Fourth Conference, held in Calcutta in April 1922, was definitely opposed to the creation of either the Chemical Service or the Industrial Service. The views of the Conference were later confirmed in official correspondence and the proposals were accordingly abandoned.

*A summary of most of the replies is given in *Bulletin of Indian Industries and Labour* No 18, pages 93-94.

†The minutes were published in *Bulletin of Indian Industries and Labour* No 18.

The decision admittedly made it impossible to carry out the policy of the Industrial Commission, and a significant comment on it was made in 1927 in the report of the Bombay Industries Committee which was able to view the position with the experience gained by subsequent years. This Committee, consisting almost entirely of non-officials, most of whom were members of the Legislative Council, wrote—

“ During the years 1916 to 1918 the Indian Industrial Commission, under the presidency of Sir Thomas Holland, was touring the country, and all subsequent thought and effort in the direction of industrial development in India has been largely affected by the recommendations of that Commission, and this committee is of the opinion that Government cannot do better than follow the general lines of that report. In following its recommendations the first difficulty met with is that the recommendations for action by Provincial Governments depend in many vital particulars upon corresponding action by the Central Government, whereas the Central Government have rejected some of the most important of the Commission's proposals. This question assumes great importance when we consider the industries which we can usefully try to develop and the expert assistance necessary for the purpose. The recommendations of the Industrial Commission for the development of industries in the provinces depend upon the Central Government providing two all-India Services: those of industrial chemists and industrial engineers. Our problem would be very much simplified if there were any such central pool of industrial experts upon which we could draw for the supply of men to man a provincial department. No province can afford to employ specialists in every industry which might be developed in that province. But if a central pool were available, an expert in any particular industry might be taken by the province for a few years only, as was the intention of the Industrial Commission.”*

But, if the position at the time is realized the decision reached by the Ministers is seen to be almost inevitable and it must not be forgotten that the creation of the services, while it would undoubtedly have advanced the policy of the Industrial Commission would have

*Report of the Industries Committee (Bombay), 1926-27, paragraph 12.

brought its own difficulties political and otherwise. Indeed in other transferred Departments the advisability of transferring the superior personnel to the complete control of local Governments has since been recognized and even if new all-India Services had been created it seems not unlikely that they would have come to an end a few years later. It is particularly unfortunate that the Industrial Commission had to report in advance of the introduction of the Reforms and not at a later date for it would probably not have been beyond their powers to devise a system which, while taking full account of the altered position, would have conserved many of the advantages which their scheme was designed to secure.

But as it was no longer possible to carry out the general scheme designed by the Industrial Commission their recommendations were still extremely valuable as indicating the lines along which the provincial departments should be organized. Ministers on taking over their portfolios found Directors of Industries in existence in most cases they were assisted by Advisory Boards as recommended by the Commission. In the Punjab three local Boards had been formed. But in the majority of provinces the departments were in an embryonic stage, most of the staff necessary to enable them to operate had still to be appointed, and programmes of work had to be prepared. In every province an advance organ. Experts were recruited, local officers appointed, old schemes revised and new schemes prepared, and increased expenditure sanctioned. There were of course difficulties, experience was small in most provinces, experts were not always forthcoming and resources were limited. Even where the men were available provincial governments were not always able to maintain a sufficient variety of experts to enable them to cope with the various activities that they recognized to be desirable. Further the general economic situation was gradually deteriorating. The prospect of industrial development which had appeared to be extremely bright became considerably dimmer before most of the new Departments could effectively participate. But in the first year or two of the new ministries existence substantial progress was made and the outlook for a time was hopeful.

At the same time the Central Government maintained its efforts to carry out as far as was now possible the scheme of the Industrial Commission. Evidence of its determination was seen in the creation of the Central Department of Industries in February 1921. The department took over the work previously done by the Board of Industries at Munster and it thus assumed responsibility for most of the subjects covered by the Industrial Commission desired to see allocated to it. But technical and industrial education could not

be included in the list nor could the new Department assume responsibility for the development of industries, save in exceptional circumstances, for these subjects were now in the care of Ministers. So that it is not too much to say that what the Commission regarded as the most important functions requiring the formation of a new Department were outside the purview of that Department when it was formed. And with the abandonment of the proposal for the industrial and scientific services, the influence which the Department could exercise on industries became further diminished. It is true that the Department had to deal with a number of subjects of importance but most of these were not of a character which made a new Department essential. There were indeed only two subjects of first class importance which involved the adoption of a new policy and an advance along new lines in the manner indicated by the Commission—these were labour and the purchase of Government stores.

In connection with the subjects transferred to ministers, efforts were made to co-ordinate provincial activity and so to fulfil the intentions of the Industrial Commission. Reference has already been made to the Conferences of Provincial Departments of Industries, of which four were held between 1920 and 1922. The proceedings of these Conferences have been published. They naturally dealt for the most part with provincial subjects and on these Ministers and Directors of Industries were enabled to exchange views. Indeed the main value of these Conferences lay in the opportunity they afforded for those facing similar problems in different provinces to meet and to pool their experience. They were also intended to give Ministers and Directors an opportunity of seeing on the spot industrial developments in other provinces. Thus the second Conference was held at Cawnpore and the fourth at Calcutta.

In other ways, too, attempts were made to co-ordinate provincial work. Following suggestions made at the first Conference the Central Government commenced the issue of three kinds of publications relating to industries. The *Journal of Indian Industries and Labour* which was published quarterly from February 1921 till May 1923 was intended both to act as a bond of union between those working on the subjects in different provinces and to give to a wider public information which would assist Indian enterprises. Specialized subjects were discussed in the *Bulletins of Indian Industries and Labour* which were published at irregular intervals. And a *Monthly Circular* was issued from January 1921 by the Central Department of Industries, this was not available to the public, but served as a medium in which Directors of Industries and the Central Department could exchange information regarding industrial developments.

Each provincial department was thus enabled to reap the benefit of the experience that was being gained in other provinces and to maintain constant touch with industrial progress in India as a whole

But by 1922 financial stringency became general and it was evident that both in the Central Government and in the provinces, retrenchment would be necessary. In the provinces the young industries departments naturally presented themselves to the financial woodcutters as suitable subjects for their axes. They were for the most part admittedly new departments and they spent money to an extent not contemplated only a few years before. The larger industrialists did not require the new departments and their voice was in some cases influential in determining the extent to which development should be arrested, those engaged in minor enterprises and cottage industries which the departments were primarily intended to foster were not vocal. In one or two cases, it must be admitted, the departments had not yet fully realized the limitations on their own possibilities. Even in respect of the smaller industries, most of the results to be gained from their expenditure lay in the future rather than in the present and those who were convinced of the value of the work initiated could seldom claim that it was indispensable.

As a result of the necessity for economy, there was no province where progress was not checked but departments in provinces where the financial stringency was most acute naturally suffered most severely. Thus in Bengal the Director in his report for 1922 was able to say that the organization, so far as the staff of officers was concerned was nearly completed during the year. This organization followed fairly closely the lines laid down by the Industrial Commission and included five circle officers and five headquarters officers—a Director, a Deputy Director, an Inspector of Technical and Industrial Institutions, an Industrial Chemist and an Industrial Engineer. The local Retrenchment Committee remarked "The Department purports to be engaged in the execution of an active policy of fostering and developing the industrial growth of the provinces." And having come to the conclusion that in the existing circumstances the work of the Department could not extend "beyond giving somewhat elementary advice and help to small industrial concerns and cottage industries, largely in the direction of collecting information and making it readily available to those in need of it", they proceeded to recommend drastic economies. Their recommendations were not fully accepted, but in 1923 the five circle officers were all discharged and of the five other posts, two remained vacant for over two years.

In Bombay, the Advisory Committee attached to the Industries Department were consulted in 1922 by Government on the advisability of closing down the Department and recommended this course. The Department was thereafter maintained in a skeleton form until its abolition in May 1924. It was recreated in July 1925, but with greatly reduced functions and resources. In April 1927 it again suffered eclipse, no appointment was made during 1927 to the Directorship which then fell vacant, and the supervision of the activities of the Department was divided between the Collector of Bombay and the Registrar of Co-operative Societies*. In Burma the Department of Industries did not survive after 1922 but the development of cottage industries was made the care of a new Cottage Industries Department which started early in 1923. Elsewhere posts were abolished, expenditure reduced and schemes postponed. Progress everywhere was retarded and most of the provincial departments were severely handicapped for several years. For example, in the Central Provinces, the Minister for Industries placed before the Legislative Council in August 1921 an ambitious programme for the industrial development of the province estimated to cost about 20 lakhs. This included extensive experimental and research work, the development of minor and cottage industries, and a big advance in technical and industrial education. The greater part of the programme was abandoned. It is only fair to add that retrenchment, while it prevented the development of many useful activities, was responsible for the abandonment of some projects which later experience has shown to be unsound.

The activities of the Central Department came under the review of the Retrenchment Committee in 1922-23. That Committee discussing the formation of what it described as "the so-called Industries Department" wrote—

"It is doubtful whether at that time sufficient regard was had to the fact that under the Reforms Scheme, the development of industries had been classified as a provincial transferred subject save in cases where such development by central authority is declared by order of the Governor General in Council made after consultation with the Local Governments concerned to be expedient in the public interest. We understand that no such declaration has ever been made in respect of any industry."

*A Director of Industries was appointed in 1928.

†Report of the Indian Retrenchment Committee, 1922-23, page 131.

And the Committee proceeded to recommend the discontinuance of nearly all the new activities undertaken in consequence of the Industrial Commission's report. They recommended the combination of the Department with the Commerce Department, the abolition of the Industrial Intelligence Section, the abolition of the Labour Bureau, the postponement of the construction of the School of Mines, and the reduction of the Stores Department which had recently been organized and was still in the initial stages of development.

Some of their recommendations were accepted. The Industrial Intelligence Section disappeared and with its elimination the new Department became unable to undertake any co-ordinating work in connection with industries. The inter-provincial Conferences came to an end, the publications were discontinued* and all attempts to assist in provincial activities were abandoned. The Labour Bureau was abolished but arrangements were made to carry on some of its work and the new Department was given the name of 'the Department of Industries and Labour'. The Commerce Department however retained its separate identity and the new Department took over instead the work of the old Public Works Department including responsibility for Posts and Telegraphs which the Incheape Committee had proposed to allocate to a Communications Department. The School of Mines project had to be set aside for the time being but the recommendation regarding the curtailment of the Stores Department's activities was not accepted.

In the new Department subjects connected with Industries formed a much smaller proportion than in the old one and the curtailment of such activity as had been attempted marked the end of the endeavours to work on the main lines laid down by the Industrial Commission. There was, indeed, some force in the criticism made by the Incheape Committee regarding the imperfect realization of the changes made by the Reforms. Neither in the Central Government nor in the Legislature was the extent of the divorce between central and provincial activity in certain directions fully realized at first. Thus the Legislative Assembly over a year after the introduction of the reforms recommended in a resolution generous expenditure on State technical scholarships in a number of subjects for which the Central Government were not now responsible. The Government of India had already been advised by the Auditor-General that they were no longer competent to grant such scholarships. It may be doubted indeed if the Central Legislature ever fully acquiesced in the constitutional position resulting from the transfer of the develop-

*The Bulletins of Indian Industries and Labour began to appear again in August 1925.

ment of industries. As late as 1927 a resolution was moved in the Council of State calling on the Government of India to spend 50 lakhs annually for ten years on ' the development of new industries in India under the direct supervision and control of the Government of India. The mover The Hon ble Seth Govind Das who obtained considerable support laid stress on the difficulties of Ministers in dealing with the subject and added " I do not see any salvation until and unless the Government of India intervenes. He urged co-operation between the Government of India and local Governments in the matter and suggested that the difficulty should be brought before the Statutory Commission on Constitutional Reforms.

CHAPTER V

Technical Education.

In reviewing the various branches of Government activity in respect of industries it is convenient to begin with technical and industrial education. Success in other directions is largely conditioned by progress in this direction and even those who are most inclined to limit Government activity recognize the provision of education for industry as a legitimate function, indeed a duty of Government.

(a) The question of control

The period under review has been characterized in most provinces by the control of technical and industrial education by departments dealing with industries rather than departments dealing with education. Reference has already been made to the slow progress made in earlier years and to the efforts on the part of those Governments who took the initiative in participation in industry to transfer the control of industrial education from the departments of public instruction. The Industrial Commission strongly supported this tendency. After a detailed discussion of the merits of the question they recommended that, with the exception of institutions of collegiate rank, all industrial and technical institutions should be controlled by Departments of Industries. They laid particular emphasis on the necessity of correlation between education of this type and the requirements of industry and they regarded the Departments of Industries as the only organizations which could secure that correlation. These views, they added, had the support of almost every educationist or standing who appeared before them.

In Burma technical education was not transferred to the short-lived Industries Department, but the Cottage Industries Department assumed responsibility for the industrial schools. A Committee which reported in 1927 on Technical and Vocational Education in Burma approved this arrangement and proposed that other important branches of technical education should be controlled by a Board directly responsible to the Minister for Education. Elsewhere the recommendations of the Industrial Commission were generally followed except in Bombay. There an industrial workshop was placed under the Industries Department for some time and that Department also supervised the weaving schools but the Department of Education (assisted by a Committee of Direction) remained in control of

technical and industrial education. The majority of a Committee which considered the subject of technical education in Bombay in 1921-2 recorded their opinion that "in common with most other provinces, the provincial Department of Education has not handled with confidence the problems of technical education." But they recommended that technical education should remain under the Director of Public Instruction, the immediate control resting with an enlarged Committee of Direction, over which the Director of Industries could, if necessary, preside*. Unfortunately his department was shortly to suffer eclipse and a Committee appointed by the local Government in 1926 to examine the working of the reconstituted department found that the Director of Industries was not a member of the Committee of Direction. They recommended his addition to that Committee and advised that industrial education should be placed under his control.

In Madras, a committee on technical and industrial education which presented its report in 1923 approved the system then in force by which trade and industrial schools were supervised by the Industries Department and the colleges and higher institutions by other departments. In the United Provinces, a committee appointed to review the working of the Industries Department received a memorandum from the Director of Public Instruction expressing the view that technical schools should be brought under his department, and they accepted the view that a change should ultimately be made in this direction. But the United Provinces Government, which in early days had taken the lead in advocating with emphasis the transfer of technical education from the Industries Department, observed "The Government have accepted the Industrial Commission's advice that the Industries Department should inspect technical schools, and see no reason to depart from it." They added, however, that, as the Commission recommended, they would seek the advice and co-operation of the Education Department.

(b) Technical education abroad

An important branch of technical education for Indians is the system of State Technical Scholarships for study abroad. The introduction of the Reforms was attended by the provincialization of the existing scheme. The Government of India were precluded by the changes in the constitution from granting scholarships except in

*The minority recommended that the agency in charge of technical education should be controlled by a Provincial Development Council and that the participation of the Director of Public Instruction should be limited to membership of the Council.

Mining and geology have had fewer scholars than formerly, with the adoption of the project for an Indian School of Mines, the Government of India ceased to give scholarships in these subjects from 1925. Several scholarships have been given by the Government of India in metallurgy.

The Industrial Commission commented on the fact that many scholars found themselves compelled, on their return, to adopt another means of livelihood than that for which their scholarship had trained them, and they suggested that scholarships should only be given to men who had already committed themselves to industrial work. This rule does not appear to have been generally followed, for in 1924 the Indian Students' Department in London stated that such evidence as it had indicated that a large proportion of returned scholars failed to secure employment in the special branches for which they have been trained. Scholarship schemes have been revised in many provinces since then, and scholars are frequently selected with the assistance of a local Board, who are competent to assess the opportunities available in different industries.

A new departure has, moreover, been made by granting scholarships to actual industrialists, a system which virtually eliminates the risk of scholars returning to find that the capability they have acquired is not wanted. In Bombay in 1921 travelling scholarships of Rs 5,000 each were awarded to two owners of a gold and silver thread factory to enable them to study improved methods of manufacture in Europe. This experiment was undertaken in consequence of a recommendation by the Advisory Committee on Industries, which desired to see scholarships granted to industrialists to enable them to go abroad and return with ideas that would assist Indian industry. More recently, the United Provinces Government, in addition to granting the ordinary long-term scholarships, have adopted a system of granting short-term scholarships to enable men actually engaged in manufacture to receive training abroad in the industries and trades in which they are engaged. The scholarships amount to Rs 2,500 each and they are given only to men whose previous experience of their trades enables them to benefit by a short-term training abroad and who are in a position to supplement the assistance given by Government. The industries in which such scholarships have been granted include hosiery, leather, sugar and soap-making.

And in a number of recent cases the grant of scholarships has been closely related to possible vacancies in Government service. For example the Government of Bombay and the Government of India have recently granted scholarships to apprentices from their printing presses, with a view to their employment in higher appoint-

ments in the presses if qualified. At present the Government of India are granting one such scholarship annually, each scholarship being held for four years. The Madras Government have also adopted a somewhat similar scheme in which part of the training is given in the Madras Trades School. A scheme for training men in aviation, designed to meet the requirements of the Civil Aviation directorate has recently been instituted. Schemes of this kind as a rule bind the scholar to serve Government for a period of years on his return if so required, provided that he is offered a post of not lower than a specified minimum salary, but they do not carry a guarantee of an appointment. A scholarship recently granted for the study of wood technology in America was also granted with a view to a Government appointment, and the metallurgical scholarships granted by the Government of India were connected with the needs of the inspectorate of the Indian Stores Department, all the scholars who returned during the period were given appointments. A number of other state scholars have also obtained official appointments.

But state activity in respect of technical education abroad is not confined to state scholars. The Education Department in the High Commissioner's Office in London, in addition to advising technical students from India assists actively in securing facilities for their training. In respect of practical training, the major portion of the work is entrusted to the Director General of the India Store Department whose technical officers approach suitable firms. Facilities are limited in some directions, particularly in civil engineering a subject in which India probably affords greater opportunities of experience than England. An arrangement has recently been made by which Indian students who have qualified as Civil Engineers from British Colleges (as well as from Indian Colleges) are given a year's practical training on State Railways in India. The student who in England would generally have had to pay the usual premium of 100 guineas, receives a stipend of Rs 100 per mensem while training in India.

(c) Engineering Colleges

In India in 1921 there were only four Government technical institutions of collegiate rank—the four engineering colleges at Rurki, Guindy, Sibpur and Poona. Two more engineering colleges have been added. The Madagan College of Engineering which was opened at Moghalpura near Lahore, in 1923 was established to provide training in mechanical and electrical engineering. The college training is given in conjunction with practical training in the Moghalpura workshops of the North-Western Railway. The higher

classes are designed to produce qualified mechanical and electrical engineers, the lower classes train mechanics and electricians. Those in the upper classes spend three years in college and then receive two years' workshop training in the railway workshops. The mechanics and electricians' classes combine workshop duties as apprentices with college training throughout their five years' period, spending approximately one-quarter of their time in college classes. The competition for entry in both classes has been keen.

The Bihar School of Engineering which formerly aimed at the training of subordinate civil engineers and included artisan classes was raised to the status of a college in 1924 and secured affiliation to the Patna University. The college in addition to its civil engineering classes maintains subordinate classes and an artisan class and trains mechanical apprentices. It has had to cope with some difficulty in recruiting its superior staff, which by 1927 had not reached the full complement, and the candidates for the mechanical apprentices class have proved somewhat defective in quality. But the provision of facilities for higher education has met a real need and there has been a big demand for entry to the higher classes. It is interesting to note that although engineering colleges with one exception, are not supervised by Departments of Industries, the organization of the new colleges in Bihar and the Punjab was the work of these Departments.

Changes have also taken place in the existing colleges. The Rurki, Guindy and Sibpur colleges have all contracted their scope with a consequent reduction in numbers, and greater power to concentrate on the lines of teaching for which the colleges were primarily intended. Rurki ceased to give training in mechanical and electrical engineering in 1923, after a faculty of engineering which has attracted large numbers, had been established in the Benares Hindu University; the college thus returned after many years to its original purpose the training of civil engineers. In Guindy and Sibpur subordinate classes have been eliminated, provision for those who formerly entered these classes having expanded elsewhere. In Sibpur the mining classes have been closed as higher education in this branch is now available at Dhanbad. The question of establishing a College of Engineering in the Central Provinces was considered by a provincial Committee on Vocational Training, but they found that there was an insufficient demand to justify its establishment.

(d) Specialized institutions

Two further Government institutions of collegiate rank have been established since the Reforms. The scheme for a Technological

Institute at Cawnpore dates from the Naini Tal Conference of 1907. The scheme framed by that conference contemplated a division of the Institute between Cawnpore and Rurki, the Cawnpore branch supplying a training in chemical industries (and later in textiles) while the Rurki branch would give a training in various types of engineering. A technological department which was designed to include cotton technology was opened in the Thomason College, Rurki, but, as already stated, it proved a failure. Classes in textiles were held for some time at Rurki but were finally closed in 1920. The Cawnpore Institute began work in 1920, the intention at this time being to make it purely an institute for research. But it was decided in 1921 on the advice of an expert Committee to combine technological training with research, and courses were opened in general chemical research, oils and leather. A course in sugar is now being started. The erection of permanent buildings was substantially assisted by subscriptions offered in response to an appeal by Sir Harcourt Butler, whose name the Institute bears. The pupils receive a preliminary training in mechanical engineering, this has been provided at Lucknow, pending the equipment of an engineering workshop in the Institute, and is designed to assist pupils to qualify as managers of large works or to start on business on their own account. Practical work is included in the course. The enrolment is 30 students. Candidates are willing to come at their own expense from other provinces, but not a single student from the United Provinces has yet entered without a stipend.

The Director of Industries in the United Provinces, writing in October 1927, gives the following particulars of the subsequent careers of the students. "Out of the total number of 33 students who completed their training in May, 1925, 1926 and 1927, seventeen are earning over Rs. 33,000 a year, five have started their own business, three have obtained overseas scholarships after being employed, four have either had posts or have been offered employment. Only four are unemployed." Most of the appointments have been given by European firms and the students have in some cases been given posts formerly held by trained Europeans.

The Indian School of Mines at Dhanbad was opened at the end of 1926. The proposal to establish a School of Mines was first mooted in 1914 and was examined and supported by the Industrial Commission. In 1921 the project was complete and a Principal was recruited. But the scheme was suspended on the recommendation of the Indian Retrenchment Committee and it was not until 1924 that funds were available for construction. The preliminary expenses in respect of buildings and equipment amounted to about 19 lakhs of

rupees. The School is intended to act as a training ground for Mining Engineers and Geologists. A three years' course leads to a Certificate in coal-mining, metalliferous mining or geology and a four years course to a Diploma in mining engineering or in geology. In addition to receiving full instruction in theory the student is trained to use his hands and mind in the manipulation of tools and machines and in the conduct of operations. He is given ample opportunity of becoming familiar with mining operations and geological formations and is also required to undertake practical work in a mine or geological field work during each long vacation. The College is supervised by a Governing Body responsible to the Government of India who defray all its expenses. The entries are limited to 50 annually under a system which secures some vacancies for every province, a considerable proportion of the students are in receipt of scholarships from provincial Governments or the Government of India. The entrance examination attracts a large number of candidates, an interesting feature hitherto has been the keenness of competition from the Punjab, a province which has few mines and the success of Punjabi candidates in securing admission.

Specialized technological training of an advanced character is also given in the Bengal Tanning Institute which was established as the Calcutta Research Tannery in 1919 and was placed on a permanent basis in 1925. The course covers two years and the subjects taught include the principles of leather manufacture and analytical chemistry as applied to the manufacture, with these are combined the actual manufacture of leather at the demonstration tannery and laboratory work in leather. A preference is given to science graduates and those who have passed the intermediate science standard but the educational tests are relaxed for those who have a connection with the industry. There has been keen competition for the available places and the anxiety of youths of the educated middle class to obtain the training offered is a remarkable testimony to the extent to which the limitations imposed on this class by religious and social custom in respect of employment have broken down in Bengal.

In the important iron and steel industry a valuable technological training is now given in the Jamshedpur Technical Institute. This was started in 1921 by the Tata Iron and Steel Company in co-operation with the Bihar and Orissa Government. An initial grant of a lakh of rupees was made by the Government of India. The institution provides a sound theoretical training in metallurgy and other subjects along with a thorough practical training in the iron and steel works of the Company. The course lasts for three years and students have exceptional prospects of employment at the end of their course.

THE STATE AND INDUSTRY

Of thirteen students who completed the course in 1924, twelve were given five-year contracts by the Company on an initial salary of Rs 200 a month and one a similar contract starting on Rs 150. Unfortunately the aversion on the part of educated youths to manual labour which has nowhere entirely died out is stronger in Bihar and Orissa than elsewhere and in spite of the prospects of employment and the grant of stipends during training, difficulty has been experienced in filling the places reserved for residents of the province. The Director of Industries observes that in the Bihar College of Engineering, which demands the same educational standard for entrance, although fees have to be paid and the prospects of employment afterwards are uncertain the applications from residents of the province have far exceeded the available places.

CHAPTER VI

Technical Education (contd) and Industrial Education

[NOTE.—The terms ‘technical education’ and ‘industrial education’ are loosely used what is described as a technical school in one province would be classified as an industrial school in another, and even within the same province there have been cases of a ‘technical school’ in one district giving precisely the same training as an ‘industrial school’ in another. The experts seem to be agreed that there is a distinction between the two classes of education, but they differ on the question of how the division should be made, and it is probable that an exact boundary-line cannot be drawn. It is convenient here and follows a fairly common practice to restrict ‘technical education’ to education, however elementary it may be, mainly or exclusively directed to the more organized branches of industry, *e.g.*, engineering, mining, and to regard as ‘industrial education’ training, of however high a standard, directed to unorganized branches of industry such as crafts and cottage industries. Schools which, although engaged in industrial education, so defined, also provide technical education have been treated as technical schools, but the proper classification of some schools is not free from doubt.]

(a) *Technical schools*

The period under review has seen a distinct advance in the provision of technical schools, but progress in different provinces has been by no means even. In Bengal there was in 1920 only one higher technical school, the Ahsanulla School of Engineering at Dacca. This school has expanded considerably and two important new technical schools have been opened. The Kanchiapara Technical School began in 1922. Constructed by the Bengal Government, it is maintained in co-operation with the Eastern Bengal Railway. The ordinary course lasts for six years, during which practical training in the workshops is accompanied by theoretical training in the school, the latter occupies about a quarter of the apprentices’ time. The school also prepares apprentices for further study for the profession of mechanical engineer at Silpur. The Calcutta Technical School is designed to give a good theoretical training to lads who are concurrently receiving practical training in various trades and industries in Calcutta and its neighbourhood. The project was prepared by a Committee in 1920 and Government acquired a site at a cost of 8½ lakhs in 1921. But financial stringency prevented progress for some time and the school began in 1926, when it absorbed the evening classes of an existing aided school. The school is under the control of a Governing Body, substantial grants being made by Government.

Another new development since 1920 is the constitution of a Board of Control for Apprenticeship Training, formed in 1921, which prepares syllabuses for training and conducts annual examinations for apprentices, and an examination for a Diploma in Mechanical and Electrical Engineering

In Bihar and Orissa since the reforms a large proportion of the funds available for the Industries Department has been constantly devoted to technical education and substantial progress has been achieved. Reference has already been made to the conversion of the Bihar School of Engineering (the only higher technical school in the province in 1921) into an Engineering College and to the starting of the Jamshedpur Technical Institution. The Orissa School of Engineering was opened in 1923 with classes for lower subordinate engineers and artisans. In 1925 it was raised to the full civil engineering class and in 1927 a mechanical apprentice department was introduced. In North Bihar the Tirhut Technical Institute was opened in 1925. It includes a leather working class, a mechanical apprentices' class and an artisan class and has already proved very popular. A number of firms have agreed to take students for practical training. A third addition to the technical schools is the Ranchi Technical School which was raised to that status in 1926 after a useful career as an industrial school catering mainly for aboriginal students. The mechanical apprentices' classes, which were constituted in that year, received, like the older classes, more applications for admission than could be granted, and the passed students of this institution are absorbed in employment without much difficulty. The same period has seen the establishment of the Jamalpur Technical Institute, which is now maintained by the Railway Board in conjunction with the Provincial Government. The course here is for three months annually over a period of five years, and East Indian Railway apprentices from several centres attend it in batches.

Reference has been made, in connection with the decision to keep technical and industrial education in Bombay under the Education Department, to the Committee which investigated the subject in that Presidency in 1921-22. The Committee was instructed to inquire into the existing position and to draw up a comprehensive scheme for the future needs. The minority put forward an extremely comprehensive scheme involving additional capital and recurring expenditure amounting to about four crores of rupees in the following ten years, the majority were much less optimistic regarding the demand for technical instruction and the technically instructed, but made a number of proposals for reorganization. But financial stringency made immediate advance difficult and from 1924 the Local

Government adopted a policy of postponing the claims of technical and industrial education in favour of primary education. No new technical schools have been opened. The two existing schools, the College of Engineering Workshop at Poona, which was re-organized and the R. C. Technical Institute at Ahmedabad have more than doubled the number of their pupils between 1920 and 1927. The chief step taken to encourage higher technical education was the assistance given at a critical time to the Victoria Jubilee Technical Institute in Bombay. This institution which is a central technological institute attracting pupils from all over India found itself in serious financial difficulties in 1922. Mainly as a result of grants from the Bombay Government amounting to Rs. 6,80,000 it was able to complete its new buildings at Breella to which it moved in 1923 and to offer facilities for many more students. It receives an annual grant from the local Government of Rs. 1,25,000.

In Burma the Insein Technical Institute which is the only higher technical school was entirely re-organized in 1922 and its teaching is now connected with the engineering courses opened at University College Rangoon in 1924. The Institute in addition to providing for artisans gives intermediate courses in civil engineering and in mechanical and electrical engineering and engineering students from the University attend the Institute for part of their course. The Institute has been enlarged in every way and the numbers have risen from 101 in 1920 to 296 in 1927. Evening technical classes have also been organised in Rangoon in civil, mechanical and sanitary engineering and building construction and have proved increasingly popular.

In Madras no new higher technical schools have been started and it has been decided to close one of the two engineering schools. The Madras Trades School was transferred to permanent buildings in 1924 and placed on a permanent basis. It provides courses varying from five to two years in subjects connected with the engineering and building trades and gives both theoretical and practical training. Technological certificates are given in mechanical and electrical engineering. Classes in printing have recently been added and there are also preparatory classes. The numbers on the roll have risen from 370 in 1920 to 638 in 1927. The Railway Works School at Perambur is an offshoot of the Trades School. Instruction is given here to apprentices of the Madras and Southern Mahratta Railway by the staff of the Trades School, the Railway Company meeting the cost. The Government Industrial Institute at Madura was reorganized in 1920 and since then has given a five years' course in metal working including foundry and smithy work, machine shop practice and the management of machinery. There is also a full course in

wood working and short courses are given in motor car driving and mechanism. The numbers have risen from 49 in 1920 to 86 in 1927. The Leather Trades Institute gives technological instruction to a few students, but the demand for the training it gives has declined in recent years.

In the Punjab, no additions were made to the number of technical schools. But a weaving factory has been practically completed at Shahdara for the purpose of instructing graduates, matriculates and artisans in the management and use of power looms. The primary aim of the institution will be educational but it is intended that it should be worked as a commercial factory. The Government Technical School at Lahore has developed both in numbers and in teaching. The demand for admission has been extremely keen and the numbers have risen from 321 in 1920 to over 800. The Kasur Engineering School has also increased in numbers.

In the United Provinces the three technical schools at Lucknow, Gorakhpur and Jhansi all date from before 1921. They have all increased the number of their pupils and there has been a steady rise in their standards. The first two schools have regular courses for both foremen mechanics and artisans but cater principally for mechanics. The Technical School at Jhansi gives theoretical instruction to apprentices on the Great Indian Peninsula Railway. The Textile School, opened in 1924 at Cawnpore, is intended for training foremen for power-driven textile mills. It includes a fairly complete cotton spinning and weaving mill, and also cotton gins. Lectures are also given in mechanical engineering, mathematics and physics, and textiles. A night class meets the needs of artisans in the local mills.

In Assam the Prince of Wales Technical School, Jorhat, was opened in 1927 with 93 pupils. It contains a class for mechanical apprentices, a motor mechanical class and a wood-working class. In the Central Provinces the Engineering School at Nagpur has grown steadily in numbers, and additional classes have been opened both in the mechanical and in the civil engineering departments. Both in Assam and in the Central Provinces scholarships are systematically given to enable students to obtain higher technical education of the kind they require outside the province when facilities are not otherwise available, and this system is also followed in some respects by other provinces. Thus the Indian Institute of Science at Bangalore and the Victoria Jubilee Institute, Bombay, have received scholars supported by several Governments and practically all provincial Governments give scholarships tenable at the Indian School of Mines, Dhanbad. Governments in some cases also contribute to the expenses

of institutions outside the province to secure the admission of students from their provinces

(b) Other forms of training

For the coal mining industry, technical education of the school standard is provided in classes in the coal fields. The classes which are maintained at several centres by the Governments of Bengal and Bihar and Orissa are held in the evenings and cover three years. They supply instruction in mathematics and science, mechanical drawing, mining and geology and mining engineering. The object is to enable educated employees to obtain certificates as mining managers. Classes are also held for those aspiring to qualify as saidars. These are conducted in the vernacular. The system in both provinces was reorganized and improved in 1921, and a whole time lecturing staff has been engaged. The depression in the coal industry has recently diminished the attendance and for the upper classes there is, in Bihar and Orissa, a dearth of students with good educational qualifications. But in 1926-27 there were over 500 on the roll of the vernacular class in Bihar and Orissa alone.

The past few years have seen great developments of the system of training apprentices in government factories and workshops. As has been already indicated, the training of State railway apprentices is in a number of cases undertaken in conjunction with government technical colleges or schools. There are other training schemes on the railways. For example the Great Indian Peninsula Railway at Bombay trains apprentices who receive technical instruction at the Victoria Jubilee Institute. Valuable training in printing is given in presses owned by the Government of India and provincial Governments. Apprentices have been trained in ordnance factories for some time and a comprehensive scheme of training covering all the military ordnance and clothing factories has recently been approved. Under this scheme training is provided for student apprentices, trade apprentices, special apprentices and boy artisans. The student apprentices who form the highest class receive a theoretical and practical training designed to fit them for trades requiring a general engineering education. Trade apprentices are given a thorough knowledge of one trade but are also given opportunities of acquiring knowledge of allied trades while special apprentices are trained in highly specialized trades such as tanning and the manufacture of harness and saddlery. The ordinary period of training for an apprentice is five years and the maximum number is fixed at 230. Provision is also made for a four years' course both theoretical and practical, for boy artisans, preference being given in selecting

these to sons of workmen employed in the factories. The annual cost of the scheme is estimated at over 2½ lakhs of rupees, and hostels are to be constructed for apprentices at two ordnance factories at an initial cost of over 2½ lakhs.

(c) *Industrial Schools*

With very few exceptions, the technical colleges and schools in India are controlled by Governments or by bodies on which Governments are represented. But industrial education is given by three types of agency. Some schools are maintained and controlled by Government, others by local authorities, *e g*, district boards, and others by private authorities, *e g*, missionary bodies and individuals. Most of the schools that are not maintained by Government are in receipt of government aid and are supervised in some degree by government inspectors. Discussing the three classes, the last quinquennial report on public instruction in the United Provinces observes—

“ In equipment and efficiency of working those which are maintained by Government stand first, following them are institutions maintained by non official denominational organizations such as missionary bodies and orphanages with industrial classes, the schools maintained by local boards come last, mainly because they receive less personal attention and supervision from members of the board than the denominational institutions do from their managers ”

Aided schools, if less efficient, cost Government less to maintain, and the question of the most profitable channel for expenditure—Government schools or aided schools—is one on which the practice of Local Governments indicates considerable divergence of views.

The Ministry of Industries in the Punjab in a resolution of 1923 stated “ It has long been recognized that the maintenance by Local Bodies of industrial schools which are partly financed by Government grants-in aid is an uneconomic and inefficient means of advancing Industrial Education ” And as soon as funds permitted, the Punjab Government embarked on a systematic policy of provincializing the schools controlled by District Boards and Municipalities. Nearly all the schools have been taken over by Government on a system by which the charges falling on the local body are reduced by 20 per cent each year until they disappear. The Delhi School has also been transferred from the Municipality to the Administration. In 1920 there were in the Punjab and Delhi nine industrial schools, all owned by local

bodies, with 1,200 scholars. In 1927 only one of these remained under a local body, and there were 18 Government industrial schools with about 2,600 scholars. These schools concentrate, for the most part, on carpentry and metal work. Another addition to the list of Government industrial schools in the Punjab is a small school for the blind at Lahore. There is also a Government zenana school for women and girls, which was formerly very small and has now over 100 pupils. A school for Hindu and Sikh women and girls started in 1924 in a building provided by the late Sir Ganga Ram and has proved popular.

The Central Weaving Institute at Amritsar has been developed out of a small weaving school. In 1920-21 when classes for educated students were begun, there were 23 students, in 1926-27 there were 66 and the Institute has taken an active part in the activities associated with the improvement of the handloom industry. The four other weaving schools were absorbed by the industrial schools in 1925.

Selected pupils from the industrial schools go on to the Mayo School of Art, Lahore, in which the elementary section was recently eliminated. The school now concentrates on advanced work in art industries in which it has long-established reputation. Two new institutions giving a specialized training are the Government Institute of Dyeing and Calico Printing at Shahdara and the Government Hosiery Institute at Ludhiana. The former which replaced a small dyeing school contains a model dyeing factory and had 66 students in 1926-27, the latter which began work in 1926 has classes both for matriculates and for artisans.

In the United Provinces the policy has been to encourage aided schools and at the same time to increase greatly the number of Government schools. The number of private aided schools maintained for the most part by Hindu, Muslim and Christian religious organizations has risen from 33 to 74 between 1921 and 1927 but only about half-a-dozen of these can claim more than 30 pupils. The starting of schools by local bodies is a new development in the province: there were no such schools in 1921 and there were 13 in 1927. Simultaneously substantial progress has been made in the multiplication and growth of Government industrial schools. The schools concentrate on one industry, the industry selected being as a rule one which is vigorous in the locality. The centre of instruction for the handloom weaving industry is the Weaving Institute at Benares which has advanced classes for inspectors, senior and junior classes and artisan classes and also teaches the manufacture. There are six small Government weaving schools

There were formerly a number of peripatetic weaving schools but these were closed on the recommendation of a committee which examined their working in 1921. A weaving and cotton printing school has recently been opened at Bulandshahr and the Dyeing and Printing School at Cawnpore, which trains both foreman dyers and artisans, has trebled its numbers in the last seven years.

To the two leather working schools at Cawnpore and Meerut one was added in 1925. All these schools give a two years' course. The Wood-working Institute at Bareilly and the Carpentry School at Allahabad have grown steadily. Both have courses for two and three years in various branches of woodworking and in upholstery and advanced courses for teachers and others who have passed through ordinary courses. Two new carpentry schools have been opened at Naini Tal and Fyzabad. Other Government schools recently opened include a metal-working school at Aligarh, a brassware school at Benares and an ebony-working school at Nagina. A needlework school for girls at Lucknow was closed in 1922-23. The School of Arts and Crafts at Lucknow has a few pupils studying fine art and gives training to a large number in industrial arts. Of the 20 Government industrial schools in existence in 1927 all but seven were opened after 1921. The total number of pupils in Government industrial schools (excluding the model weaving schools in which the numbers have always been small) was about 1,100 in 1927 which is about double the numbers of seven years before.

In Bengal there were, apart from the weaving schools, at the beginning of the period three industrial schools owned by Government, a fourth was taken over from a local board in 1922. These schools give a training in several branches of industry, carpentry and blacksmithy work being included in every case. The provincial Retrenchment Committee observed in this connection "Government schools are not only unnecessary but absorb so large a share of the available public funds that other schools are likely to receive insufficient support." They accordingly recommended that the schools should be handed over to district boards. The recommendation was not accepted, but the Local Government adopted a policy of starting new schools only on a grant-in-aid basis. The Director of Industries discussing this policy in his report for 1926 observed "The position is unsatisfactory from every point of view and there seems to be no hope of substantial progress in technical education unless either Government itself shoulders the burden or local bodies tap new sources of revenue." No school was opened by a local board during the period, but there has been an increase in the number of schools under private management, and a large addition to the number of their

scholars In 1926 the Director of Industries reported that the Government schools were not training students how to make a single saleable article except the roughest products of the village carpenter and that the goal of turning out first class craftsmen had been entirely missed Since that date the reorganization of the schools has been taken in hand The number of their pupils in 1927 stood at about the same figure as in 1921

On the other hand the Government of Bengal have adopted a policy of increasing the number of weaving schools The object is to provide in every district at least one centre of instruction in weaving and in larger districts two Thus the number of district weaving schools was raised from six to eight in 1926 and the number of peripatetic training centres, which stood at eight in 1921, had reached 26 by the end of 1926 All these institutions are attached to the Central Weaving Institute at Serampore which trains teachers in weaving and also equips students to set up and manage small weaving and dyeing factories The higher course was extended to three years in 1920 There is also an artisans' class lasting a year Female classes, which were started by the Young Women's Christian Association with Government aid in 1921 were taken over by Government in 1922 and are affiliated to the Institute Other activities of the Institute are mentioned elsewhere An entirely new institution is the Silk Weaving and Dyeing Institute at Berhampore which opened in 1927 with 60 pupils

In Bihar and Orissa the Ranchi Industrial School, an industrial school at Phulbani, a weaving school at Bihar and apprentices classes in the Dehri Canal Workshops are old institutions, as has been already stated the largest of these the Ranchi School was raised to the status of a technical school in 1926 Three new institutes have been started during the period The Bhagalpur Silk Institute began work in 1921-22 and was moved to a new building of its own in 1923 The Cottage Industries Institute at Gulzarbagh was opened in 1925 its activities have covered a large number of industries including cotton weaving, dyeing lametta weaving durry and carpet making knitting toy-making The Wool Weaving Institute at Gaya started as a demonstration factory and is now maintained for educational purposes These institutes follow the usual institute plan and their activities are not confined to tuition they are responsible for the stimulation in various ways of the industries to which they relate and some of their other activities will be noticed later The Bhagalpur Silk Institute, the most successful of the three so far had 69 pupils in 1927 the Cottage Industries Institute had 33 and the Wool Weaving Institute 19 Classes have also been started for instruction in the

use of dobbees with handlooms at Ranchi and Madhubani. A class to teach book-binding and composing work has been opened in the Gulzarogah Government Press. Local boards own no technical or industrial schools in this province, but some have under consideration proposals for opening industrial schools. Aided industrial schools are small and not very numerous, but they include all the female pupils in receipt of training in crafts.

In Madras industrial education has hitherto been left almost entirely to private authorities assisted by grants-in-aid. Apart from the institutions mentioned in the previous chapter, the only Government school offering industrial education to the public is the Textile Institute. Opened in 1922 and placed on a permanent footing in 1925, the Institute provides the usual two courses—a supervisors' course lasting two years and an artisans' course of one year. In addition to instruction in handloom weaving it teaches dyeing and block-printing and maintains a hosiery section and a museum.

The aided schools, numbering 57, with the exception of one owned by a local body are carried on under private management. Christian missions have been particularly active in this direction and special attention has been given to craft instruction for girls. The regulation of these schools appears to have been more systematic than in other provinces: a whole-time Inspector of Industrial Schools supervises them on behalf of Government and a reasonably efficient standard is maintained. But they are unevenly distributed throughout the Presidency and the Madras Committee on Industrial and Technical Education of 1922-23 recommended that Government should as funds permit open model industrial schools in certain areas. Proposals for the establishment of three such schools were prepared in 1927.

In Burma the Saunders Weaving Institute at Amarapura, which formerly taught only artisans, introduced advanced classes in 1923 and has about doubled its numbers since 1920. It is also responsible for extra-scholastic work in assisting the handloom industry. Training in dyeing and carpentry is also given. Two new industrial schools have been opened, a lacquer and carpentry school at Pagan where the lacquer industry is well-established and a pottery school at Insein where lads who have already served a term with master potters are given a more advanced training. There is only one aided private technical and industrial school in the province, district funds have been used from time to time to start weaving schools, but these have hitherto had short lives.

In Assam the older institutions comprise the industrial schools at Shillong and Kohima and the Shillong Weaving School. These

three institutions jointly had only 49 pupils in 1927 and an industrial school at Tura which was opened in 1919 was closed in 1926. The School of Handicrafts at Sylhet which started in 1923 has been more successful. It has two courses of three years' each in wood-working and metal-working and had 72 pupils in 1927. The Government Weaving Institute at Gauhati which has given instruction to artisans since 1920, opened higher classes in 1923, these attracted more applicants than could be admitted and the passed pupils have done well.

In the Central Provinces there were two Government industrial schools at the beginning of the period—the School of Handicrafts at Nagpur and the Robertson School at Jabulpore. To these have been added a School of Handicrafts at Akola started in 1922 and a small leather tanning school at Nagpur started in 1925.

Apart from the weaving schools the only industrial school belonging to the Government of Bombay is in the School of Art at Bombay where the Reay Art Workshops give instruction in cabinet making and stone carving, metal work, house decoration and carpet weaving. Three industrial schools for criminal tribes were opened by Government during the period. The number of other industrial schools has remained fairly constant.

(d) *Stipends*

In addition to providing facilities for industrial and technical education it has been necessary in some areas to provide stipends for the pupils on a liberal scale. For example in Bengal in 1926 over 60 per cent of the pupils attending Government technical and industrial schools were in receipt of stipends. In the majority of provinces stipends are given to a substantial proportion of the students. Efforts were made in some cases to reduce the stipends. In Bengal on the recommendation of the provincial retrenchment committee who were impressed by the fact that in the preceding year there were 2000 applications for admission to the Serampore Weaving Institute the Local Government abolished stipends and free studentships at that institution. The effect was instantaneous: the upper class secured only six students in the following year and the orders had to be revised. In Bihar scholarships in one Government school and one aided school were halved "in order to educate the parents in their duty of giving their sons superior technical instruction." The parents declined to be educated in this fashion, recruitment was adversely affected and the policy had to be reversed. 15 vacancies reserved for students without scholarships in one school were unfilled. An interesting experiment is being made in connection with the Sylhet

School of Handicrafts where stipends were sanctioned for six years from the start and are to be abolished in 1929

The need for such stipends arises mainly from the fact that it is difficult for the artisan classes to lose the supplementary earnings of their boys. The position in many areas is set out in the following extract from a recent resolution of the Government of the United Provinces, (where stipends are fairly numerous) —

“ Nearly all Government schools are free. But even so artisans are not generally willing to send their children to school without the help of stipends. The Government have hitherto acquiesced in the position and by offering small sums for subsistence are helping the poorer parents to release their sons from the post of subsidiary wage earner in order that technical training may double their earning power. But as the value of the technical schools comes to be more generally recognized, the proportion of stipendiary students ought to decrease.”

A further factor which adds to the need for stipends in some cases is the enhancement in the economic value of the pupil which results from even an incomplete course. Some schools have suffered severely from pupils leaving before their training was complete because they were sufficiently trained to earn what appeared to them to be an adequate salary. It should also be remembered that the work turned out in a good industrial school has some economic value.

Stipends are also required in some cases to attract pupils from the educated classes. Here the difficulty is not primarily economic, for parents who will pay to secure for their boys a literary education which gives poor prospects of a career frequently expect stipends to be given at technical schools whose pupils have excellent prospects. In the United Provinces and Bihar and Orissa in particular, it is said to be difficult to attract the best type of student, and complaints are frequent that technical education is regarded by parents as suitable only for those who are not good enough for anything else. But if the social prejudices against manual labour have nowhere entirely disappeared the advance of public opinion has combined with economic pressure on the middle classes to produce a steady improvement in recent years. In the biggest cities there is generally keen competition to enter institutions which are efficiently equipped to meet the demands of industry, and students from some provinces particularly Bengal are prepared if necessary to go far afield and to incur considerable expense in obtaining a training at institutions which find it difficult to attract local students.

CHAPTER VII.

The Development of Cottage Industries

It is a platform commonplace that the cottage industries of India are dead or dying and that their resuscitation is a primary duty of Departments of Industries. These departments have played an extremely important part in assisting the cottage industrialist, but those who are acquainted with the facts do not speak of their work as resuscitation or revival, for the simple reason that the belief that cottage industries generally are moribund is not founded on fact. With the possible exception of China, no country can show such activity in respect of cottage industries as India and there is no sufficient evidence to justify the conclusion that there has been any general decline.

Some industries it must be admitted, are unable to face competition from the factories. This is notoriously the case with cotton spinning by hand. The political movements of 1921-23 were accompanied by the preaching of a revival of the spinning-wheel as a solvent of India's troubles, and under this stimulus some spasmodic activity was shown. Industries Departments in one or two cases endeavoured to popularize an improved *charkha* but the hand-spinning movement was doomed to failure because in their efforts to secure better utilization of the spare time of the poor, the leaders selected an industry in which the cottage worker fought the mills on such entirely uneven terms as to make his remuneration phenomenally small.

With handloom weaving, by far the most important of India's cottage industries, the position is entirely different. Whatever may be its history in the future, the prevailing impression that its best days are long past is entirely erroneous. It can be established beyond dispute that in the period under review more cloth was produced by handloom weaving in India than in any corresponding period for which we have statistical information, and while acknowledgment must be made of the stimulus given to the industry by the political movement in favour of hand-woven cloth, it appears to be the case that, at present at any rate, the handloom weaver can more than hold his own against the mills in simple economic competition. The following paragraphs contain a very brief account of activities which have played an important part in making this possible.

The Industrial Commission laid emphasis on the distinction between trades such as that of the carpenter and the blacksmith which

are carried on principally as crafts and cottage industries such as handloom weaving which compete with organized industries. In the former case success depends on manual dexterity and a knowledge of the craft, this must ordinarily be acquired in youth, and can be taught in an industrial school. But in the latter case the problem is different. The main difficulty does not lie in the acquisition of skill, such skill as is necessary can easily be acquired. Success depends on commercial factors rather than on dexterity, it depends on the use of the best appliances, on attention to design on marketing. The adult must be assisted as well as the child, and education takes a different meaning and different forms.

Fixed weaving schools have their value and, as the preceding chapter has shown, the number of these has steadily increased. But experience has shown that demonstration in the weavers' villages is more effective than the education of the weavers' children at a fixed centre and it is on demonstrational methods that attention has been mainly concentrated. The methods of training weavers at home have differed from province to province. In some areas schools have been set up which differed from the fixed schools mainly in the fact that they moved at intervals to fresh areas. Very commonly demonstration has been effected by means of small parties especially formed for the purpose. For example in Bombay demonstrations have been effected by a two-loom method, the demonstrator working for six months in a centre with one loom while any local weaver can secure instruction on the other. In several provinces schools—fixed or peripatetic—are combined with demonstration parties.

In Madras where two demonstration parties were at work in 1914, five parties were organized in 1920-21, eight were at work by 1921-22 and ten in 1922-23. The number has since been reduced to five as success has been achieved to such an extent as to require a smaller number. Weaving is taught to weavers' children in a number of aided industrial schools. In Bombay in addition to nine weaving schools moved from time to time as circumstances required, nine demonstration parties were at work in 1926. The number of weaving schools was reduced to four in 1927. In Bengal, in addition to the eight fixed weaving schools there were in 1926 26 peripatetic schools of which 18 were established for the first time in that year. In Bihar and Orissa in addition to maintaining a weaving school and establishing the Cottage Industries Institute for training in weaving, the Industries Department has kept a number of demonstration parties constantly at work, there were four peripatetic parties in 1921 and ten in 1927. In Assam two demonstration parties were organized in 1921 and a third in 1925. In the Central Provinces a special staff

has worked continuously in the villages popularizing new appliances. In Burma demonstration parties were organized by the Saunders Weaving Institute in 1924 and in 1926 six demonstrators were at work in different districts. In the United Provinces where, as in the Punjab, reliance has been placed mainly on schools and the central Institute, a Committee which investigated the subject in 1922 found the schools in an unsatisfactory state. The peripatetic schools were thereafter abolished and the model weaving schools organized since then are responsible for demonstration while aided weaving schools are being encouraged. In the Central Provinces, on the other hand, the work has been continuously entrusted with very satisfactory results to a special staff working in the villages and Government have opened no regular weaving schools. In nearly all provinces extensive use has been made of exhibitions to display the advantages of improved methods. The all-India Hand-weaving Exhibition organized at Patna at the end of 1921 with the co-operation of most of the Departments of Industries was particularly successful. But experience tends to show that to secure lasting success in any centie demonstrations must be carried on there for a reasonably long period.

The first object aimed at by the organizations engaged in demonstration and education has been the popularization of the fly-shuttle in place of the handthrown shuttle. This reform, which is sometimes effected on existing handlooms and sometimes by the substitution of fresh looms, is estimated by the experts to enable the weaver to add, without extra effort and at an almost negligible cost, between 40 per cent and 100 per cent to his rate of production, according to circumstances. Experiments were made in Madras as early as 1902-5 in the use of the fly-shuttle and the first demonstration party was organized there in 1905, while in several provinces efforts were made to popularize the fly-shuttle during or just after the war. But the general spread of the fly-shuttle is a movement of the last few years and it has been responsible more than any other change for the improved production of handloom weavers. The productive capacity has in some areas increased so greatly as to produce marketing difficulties particularly in the less favourable marketing conditions which have marked the last year or two. In some places weavers, attributing correctly the increased production to the fly-shuttle have actually sought a remedy in the return to the old shuttle. The change has not been everywhere effected without opposition. In Chota Nagpur an attempt was made to pass a resolution boycotting those weavers who took to fly-shuttle looms on the ground that they could sell their cloth more cheaply and other weavers, were unable to compete with them. In Madras, opposition was offered by village money-lenders

who, fearing the attainment of independence by the weavers, fixed so much lower rates for cloth woven with a fly-shuttle that the weaver was in some cases compelled to revert to the old shuttle. A constant obstacle which is only overcome by patience has been the conservatism of the weaver. Even where the child using the fly-shuttle is able to earn more than his father, the parent working at his side has not always been willing to change. But if the work is still far from complete, the fly-shuttle has now got a footing nearly everywhere and in many areas in which intensive work has been done the old shuttle is practically extinct. Automatic looms are now being introduced in some places, but their comparatively high cost raises a difficulty which does not attend the introduction of the fly-shuttle.

The increase of the rate of production of the weaver has raised a fresh problem in that those carrying on the subsidiary processes—winding, warping, sizing, etc., by village methods can no longer keep pace with him. The introduction of machines for the preparatory process is uneconomical so far as the individual weaver is concerned. More than once Department of Industries has devoted attention to the designing and introduction of warping and sizing machines worked by hand and suitable for small groups of weavers but it is not usually easy to secure the degree of co-operation necessary to secure the best results.

Vigorous efforts have also been made to enable the weaver to improve the quality of his output. Generally speaking, it is in the very coarse work and the very fine work that the handloom weaver can compete effectively and the indications suggest that fine work has the greater possibilities for him in the future. Efforts have been made in most provinces to introduce dobbies, which enable the weaver to produce cloth with patterned borders, and these have met with considerable success. In the Central Provinces where their sale on a substantial scale dates from about 1920, 10,000 dobbies had been supplied by the Industries Department in conjunction with local experts up to the end of 1926. A simple form of double box sley for weaving check patterns with two shuttles has proved popular in several provinces. And fairly general attention has been given to the introduction of jacquard looms which enable the weaver to produce cloth with comparatively elaborate designs.

In addition to convincing the weaver of the value of improved appliances it is generally necessary, if the best results are to be obtained, to assist in their supply. Departments have therefore usually undertaken the supply of appliances directly or indirectly. In many cases local carpenters have been taught to copy demonstra-

ters in silk. In other cases carpenters have been employed and taught at departmental institutes. The carpenters employed in the Godan Weaving Institute, Assam, have recently been unable to cope with the public demand for looms and spools.

Handweaving, while it is the main occupation of large numbers, has obvious possibilities of expansion as a spare-time industry. Even the professional weaver is frequently a part-time agriculturalist, and to the professional agriculturalist weaving offers the opportunity of an appreciable subsidiary income. Attention has hitherto been paid mainly to the already well-learned at weaving but some progress has been made in popularizing weaving with classes who did not practice it before. Many students attend the institutes who have no weaving tradition. An interesting experiment in the introduction of weaving in villages where it was unknown before has been made in Bombay where a school to train agriculturists in weaving was started in a village in 1922 and has been extended in turn to four other villages since then. In one village where the school stayed for a year a small weaving factory with four looms was set up by a landowner and 20 looms were purchased by other agriculturists. Nine applications for the opening of similar schools came from surrounding villages. In another nine cultivators aged between 16 and 30 who formed the first class all purchased looms after completing their four or five months' training. The Bombay Government in 1927 placed an officer on special duty to examine among other questions relating to handloom weaving the lines on which weaving could be encouraged as a subsidiary industry for those engaged in agriculture.

A characteristic organization in connection with the systematic development of handloom weaving is the central institute. Although the general system in the various provinces is very far from uniform the institutes have shown an increasing approximation to each other in method. There are now central institutes dealing with cotton weaving in seven out of the nine major provinces—prior to 1920 three of these were not in existence and two confined their training to artisans. On the educational side all conduct two separate courses—one designed to train artisans to be competent weavers and the other designed to train students to act as weaving instructors and demonstrators and to enable them to initiate or supervise small handloom factories. But the training of pupils is normally only one of several functions of an institute. The staff of the institute are generally responsible both for the supervision of the weaving schools and the organization of demonstration parties throughout the province. And they have to devote attention to the preparation of designs to the improvement of appliances and their supply to the weavers to re-

search, to the supply of advice and assistance to inquirers, and to the fostering of allied cottage industries

The related cottage industries of dyeing and printing of cloth lend themselves to similar lines of development. The weaving institutes generally include dyeing and in some cases block printing in their curricula and organize demonstrations in the subject. In the Punjab dyeing and calico printing are entrusted to the special Institute established at Shahdara which includes a model factory and is also responsible for peripatetic demonstrations in dyeing and printing. In Bombay a request from local weavers in 1920 led to the starting of a demonstration party for dyeing and calico printing. It has proved of distinct value, although in one centre the dyers who adopted the improved methods had to face a boycott of their more conservative colleagues, who were backed by merchants interested in importing dyed yarn. In 1925, on the request of a weavers' cooperative union, the party was centred in Sholapur. It effected great improvements in dyeing methods, corrected the strangely numerous mistakes of the local dyers, introduced fresh recipes and led to the opening of a number of new dye houses. After accomplishing its work, the party was transferred to Sind. Hosiery is in several cases another industry for which the weaving institutes are responsible. In the Punjab the separate Hosiery Institute, which has recently opened at Ludhiana, has undertaken this work.

In some provinces, the silk industry is of importance and efforts have been made to assist the cottage industrialist in all the branches of the industry—silk rearing, silk reeling and the manufacture of silk goods. In Assam, the supply of improved seeds for silk rearing has been undertaken in connection with the extensive investigations into sericulture, and in Madras, where efforts have been made to extend the production of silk to new areas, seeds have been distributed and peripatetic rearing parties have been employed to assist rearers. Efforts are also being made there by demonstration and the training of operatives to introduce modern methods of preparing improved silk yarn. The improvement of methods and designs in respect of silk goods has formed an important part of the work of the Weaving Institute at Amarapura in Burma, which has enabled many silk weavers to increase their earnings substantially.

In Bihar a Silk Institute was opened at Bhagalpur, a centre of the industry, in 1921. Its main work is the improvement of designs and of methods of manufacturing silk goods, including dyeing and finishing, but it has also devoted attention to the rearing and reeling of silk. Manufacturing improvements have been popularized including the introduction of the fly shuttle. It is curious to note that, as

happened in a few cases with cotton weavers elsewhere a large number of weavers faced with a depression of trade in 1926 gave up the new looms under the impression that their market would improve with diminished production. They have since started to resume their work on fly shuttle looms. Designs after being produced in the Institute are taken up by weavers in the bazar and the local industry has benefited considerably by the improvement of designs. The Institute though not a strictly commercial concern is much more than a purely educational institution. In 1926-27 155 artisans were employed in the Institute and silk goods to the value of over Rs. 40,000 were produced, sales being effected both in India and abroad where the goods are establishing a reputation. The total net cost of running the Institute for the year was Rs. 4,000. Recently a Silk Weaving and Dyeing Institute has been started at Behrampore by the Government of Bengal.

The improvement of the wool weaving industry in Bihar and Orissa is entrusted to a separate institute at Gaya. In Bengal a demonstration party teaching wool spinning, blanket weaving and coir-making started work in Sandwip Island in 1924 and has done valuable work. Demonstrations and exhibitions of the spinning of coir, jute and hemp of rope making and the weaving of jute are also given regularly in Bengal. Demonstrations have also been given from time to time in basket-making. These demonstrations have been of considerable value to those already engaged in the industry, but it seems to be doubtful if they have had much effect in inducing the ordinary agriculturalists to take up the industries as spare time occupations. In Burma the industrial school at Pagan has been responsible for improving the designs used by local lacquer craftsmen.

The Cottage Industries Institute at Gulzarbagh in Bihar, to which reference has already been made represents an endeavour to deal in one institution with a number of cottage industries. Since its foundation in 1925 the Institute has taken up, in addition to weaving, knitting and dyeing, a number of minor industries such as lametta work, durry and carpet making, the weaving of tape and *neuar* and the manufacture of toys. The Institute, in addition to training boys, employs artisans on a commercial basis, with a view to encouraging the general adoption of the improved methods of working which have been devised. Experience, however, has shown that demonstration and training in the Institute has little effect on local artisans, and the best results are obtained where demonstrations are also given to artisans outside the Institute.

In Bombay an endeavour was made to assist a village industry by means of a demonstration factory. Casein is made by Kaira

villagers on a fairly extensive scale, but their product commanded an indifferent price because much of it was inferior and no attempt was made to maintain a standard. A small casein factory was therefore started at Anand in the Kaira district. The experimental and analytical work was conducted at the Gujarat College and the factory was successful in producing good casein on much the same scale as that on which the villagers worked and with appliances that they could use. The factory was visited by a number of villagers and dealers and apparently had some effect on local conditions. It obtained a good price for its lactic casein and was offered large orders but its scope was limited to demonstration purposes. Experiments were made later in the manufacture of rennet casein but the expert reports on the product were not very favourable. The activities of the factory were cut short by the need for retrenchment in 1923.

The development of cottage industries depends on the expansion of markets and in this direction the cottage industrialist is able to do little unaided. As a rule he is isolated from all markets that are not in his own vicinity, he does not know where the customer is, what he wants and how much he is willing to pay, and depends for the sale of his product on a local money-lender, to whom he may be permanently indebted and from whom he seldom receives a fair price.

An effort was made in Madras to assist the lace and embroidery industry by the exploration of markets. This is an industry dependent for development mainly on markets abroad. A lady was deputed to survey the industry in the Presidency and later examined the possible markets overseas and submitted a report. Government also collected information as to the patterns in demand abroad, distributed these patterns to the local agencies engaged in the industry and stimulated the demand by enlisting the support of an English firm.

In the majority of provinces depots have been opened for the sale of goods made by cottage workers. In the Punjab a depot was established in 1921 in connection with the School of Arts and Crafts. It has sold both the products of the school and of workers outside and has worked at a profit. Between 1921 and 1927 it has paid over Rs 3,00,000 to those supplying goods, it has secured increases in prices to producers and decreases to consumers by eliminating middlemen's profits and it has at the same time been responsible for an improvement in the quality of the goods. It has also assisted industrialists in getting into direct touch with purchasers both at home and abroad. One difficulty experienced in this connection elsewhere is that the cottage worker does not realize the importance of keeping up a high standard. The British Empire Exhibition at Wembley gave a great

stimulus to cottage workers in several provinces but some of the advantage gained was lost subsequently through the supply of inferior goods. The United Provinces Government have now appointed agents in London for the sale of goods of this kind, but goods are sent through the emporium which can examine them before despatch and so maintain a satisfactory standard. The emporium in Lucknow was maintained at the School of Arts and Crafts, and at one time sold goods on a larger scale than that of the Lahore depot, but mainly owing to faulty management it worked at a loss. It was reorganized and moved to fresh premises in 1926 but its accounts for recent years show a substantial adverse balance.

An emporium was opened by the Industries Department in the Central Museum at Nagpur in 1921, and it has assisted in bringing buyers and sellers together and has effected sales on a small scale. The direct sales have declined in recent years. In Burma the Department of Industries maintained a sales depot for a short time and later kept only samples, supplying articles on orders being booked. In Bihar and Orissa a sales depot was organized in conjunction with the Cottage Industries Institute, which sells goods on a commission of one anna in the rupee and has employed a travelling agent to secure orders. In Assam an emporium was opened in 1920 at Gauhati. It is now in two sections, an emporium which sells the products of cottage workers and a store which sells raw materials to the cottage worker. Where necessary raw materials are supplied on credit and the cost deducted from the price paid for the finished article. Goods are also sold on commission sale, but experience here and elsewhere tends to show that the money-lender can only be eliminated by offering the facilities he offers. He may charge a high price but he supplies material on credit and he pays cash for goods taking on himself the risks of selling.

The ultimate solution of the marketing difficulty would appear to lie in co-operation. Some attention has been devoted to industrial co-operative societies for purchasing raw materials and marketing the products. But while there have been a number of successes the work has generally been extremely difficult and it can hardly be claimed that co-operative methods have made a big impression in any province in this direction as yet. Co-operation demands the possession of qualities with which the cottage industrialist, and especially the handloom weaver appears to be poorly endowed.

CHAPTER VIII

Research and Investigations

Great stress was laid by the Industrial Commission on the importance to industrial development of scientific research. Their proposals for the formation of all-India services dealing with chemistry, botany, bacteriology, zoology and entomology were designed mainly to make it possible to secure the systematic pursuit of researches likely to lead to industrial advance. They had before them evidence of the value of the work done by the Geological Survey, a service whose scientific investigations have been of great value in the stimulation of India's mineral development, and this model clearly inspired the form of the scheme they proposed. The Chemical Services Committee, in their concrete proposals for a Central Research Institute at Dehra Dun, connected with a chain of provincial institutes and manned by the service whose organization they planned, merely filled in the details of one branch of the scheme prepared by the Commission.

The fate of these proposals has already been given. The services were not created, the Central Institute got no further than the purchase of a site, and the chain of provincial institutes has failed to materialize. But if the comprehensive and co-ordinated scheme of the Commission has not been carried into operation, progress has been made in some directions.

In respect of forest products a big advance has been effected. The Forest Research Institute at Dehra Dun can be regarded as carrying out, in the sphere delimited for it, work of the type that the Industrial Commission desired to see. In addition to branches dealing with silviculture, chemistry, botany and entomology, it contains an economic branch specially devoted to research in industries dependent on forest produce. The work here is, in the main, a recent development for although in some directions, *e.g.*, paper pulp, it is based on laboratory experiments going back over a number of years, adequate facilities for research in forest utilization were not available until the construction of the new Institute in 1921. Thereafter the erection of machinery began and the various sections have been organized. The capital invested in the Economic Branch alone is about Rs 16,00,000 and the annual expenses are in the neighbourhood of Rs 4,00,000.

The sections whose work bears most directly on industries are those dealing with timber testing, seasoning, wood preservation and paper pulp. Lack of space makes it impossible to give any detailed

account of the actual research work, but a few of the results obtained may serve to illustrate the general aims. The work done in testing, seasoning and preserving timbers is directed towards securing Indian timbers which will supply various needs in industry. Thus a large amount of work has been done on railway sleepers, various woods have been subjected to tests, to kiln-seasoning, to antiseptic treatment and results of great value to Indian railways have been secured. To give only one example the experiments made by the Economic Branch have led to the establishment in 1923 by the North Western Railway of a creosoting plant, capable of treating 400,000 broad gauge sleepers annually. The timbers treated had not been used for sleepers before, and had formerly been marketed with difficulty. Rifle-stock wood which was formerly imported from America, is now as a result of researches at Dehra Dun entirely supplied from the North-West Frontier Province and Kashmir and important results have been achieved in the substitution of kiln-seasoning for air-seasoning at a great saving of cost. Experiments have been carried out in the examination of the utility of numerous Indian woods for various manufactured articles, and many Indian woods have been given a greatly enhanced industrial value.

The experiments are conducted on an extensive scale where necessary, for example the artificial seasoning work is done on a commercial scale so that the repetition of work successfully done at Dehra Dun can be confidently undertaken by private firms. In the paper pulp section the factory plant erected in 1924 is capable of producing 8 tons of paper weekly. The earlier work in this direction eliminated a large number of unsuitable materials and has enabled efforts to be concentrated on a limited number of grasses, including bamboo. Among the important recent results is the evolution of a system which greatly reduces the cost of bleaching bamboo and *sabal* fibre and secures a gain in the yield of pulp. Much of the activity of the paper pulp section is devoted to the examination of forest areas regarded as suitable for exploitation by this industry. Several areas have been thoroughly examined and reported upon with the result that concessions have been taken up. And the investigations into bamboo pulp were largely responsible for the erection near Calcutta of a mill using this material. One of the newer developments is the installation of a veneer shop in 1924. Plywood made in this sub-section now adorns the legislative chambers at New Delhi. On the other hand the section dealing with tans was closed in 1923.

The only provincial government institute organized for research in more than one direction is the Harcourt Butler Technological

Institute at Cawnpore which started work in 1920 as a research institute and was shortly afterwards altered in scope so as to include educational aims. The three branches of work taken up in it were general chemical research oils and leather. A number of researches have been carried out in all branches. For example investigations have been made in connection with the constituents of Indian turpentine, the possibility of obtaining soda from alkaline soils, the manufacture of strychnine and brucine, the utilization of local essential oils and the manufacture of Portland cement. Experiments have also been conducted in producing new varieties of leather and investigations have been made into the tannin content of Indian timbers.

Research into subjects connected with tanning has been carried on in other provincial institutions specially devoted to this branch of industry. The chief centre for research in this direction has been the Bengal Tanning Institute formerly known as the Calcutta Research Tannery which was opened in 1919. A scheme for a large Imperial Tanning Institute at Calcutta which would have absorbed the provincial institution was approved by the Government of India in 1921, but the need for retrenchment prevented it from materializing, and the Institute has been maintained by the Government of Bengal. The buildings include a laboratory and an experimental tannery and the investigations have taken the form both of laboratory analyses and experiments and of practical tanning experiments. For example, in the laboratory attention has been given to the testing of old and new tan-stuffs and to the analysis of the waters used in different tanneries, and results of practical importance have been obtained from extensive researches into the effect of neutral salts on the basicity of chrome liquor. A large number of practical tanning experiments have resulted in the improvement of existing processes and the introduction of new methods. Thus a method has been successfully worked out for the production of superior sole leather from buffalo hides, and the introduction of suitable processes for tanning lizard skins and for manufacturing glaze kid from local goatskins has led to the adoption of new branches of the leather industry in Bengal.

In 1923 a Committee was appointed by the Government of Madras to consider what should be done to further the development of the leather industry of the Presidency. Among their recommendations they suggested that in view of the great importance and potentialities of the industry in Madras the Leather Trades Institute should include a properly equipped research laboratory and an adequate research staff. The local Government appointed a staff for

research and new laboratories were erected in 1925. Work has been done in the laboratory on the fermentation of tan liquors, and on a number of tanning materials. In the tannery successful experiments were made in the use of wattle bark in substitution for the more costly *avaram*, and the possibility has been established of obtaining suitable leather by re-tanning *dhori* hides (a porous bag-tanned leather). In the Punjab research was started in the demonstration tannery at Shahdara into several subjects connected with tanning, but the tannery was closed in 1927.

Apart from the chemical researches conducted in the institutions mentioned, chemical research in certain branches of industry has been conducted in certain pioneering factories in Madras. Thus the Madras Industrial Institute has done a considerable amount of research in connection with inks, and in the Kerala Soap Institute investigations have been made into soap and glycerine. At the Madras Glue Factory experiments of some value were conducted in the manufacture of glue, a subject which was also the subject of some research in Bengal.

A large number of isolated chemical researches have been undertaken by officers employed by the provincial Industries Departments, but the majority of Departments have not been equipped on a scale permitting the adoption of any systematic programme. Only in two provinces have whole-time Industrial Chemists been maintained by Industries Departments. In Bengal an Industrial Chemist has been employed in the Department of Industries since 1921 and in Madras there was a similar appointment up to 1925, when it was abolished on the appointment of special chemists for leather research.

In Bengal a number of investigations have been made in connection with the match industry, including experiments in the bleaching of *gengwa* wood, match-head composition and the damp-proofing of matches. The other subjects of investigation have included glue, sugar, lac and glass. Systematic work was hampered for some time by the lack of an adequate laboratory. A properly equipped laboratory was constructed in 1925-26, and a programme of industrial research has now been prepared with the assistance of the Advisory Board of Industries. Both in Madras and in Bengal experiments were made in the retting of cocoanut fibre and independently the investigators were able to demonstrate that tidal water was not essential for retting, as had previously been believed. In Madras extensive investigations were made into the most suitable conditions for the disintegration of the fibre and methods were evolved

of shortening the retting period considerably. Other questions investigated included the utilization of limes as a source of citric acid, the extraction of tartaric acid from tamarinds and the manufacture of sodium carbonate from certain alkaline deposits.

In some other provinces researches have been conducted by part-time officers acting as Chemical Advisers to Industries Departments. Thus in Bihar and Orissa the chemical researches conducted by the Chemical Adviser included a study of the *Khari* industry. *Khari* is an efflorescence compounded of sodium sulphate and magnesium sulphate and the investigations were directed mainly to ascertaining the possibilities of producing sodium sulphate on a scale which would make the manufacture of sodium carbonate a commercial proposition. In Bombay some attention was given to study of the bitters of *Khargocha* and of Sind soda (*irona*) and to researches in connection with casem.

Minor engineering investigations designed to assist the smaller industrialist have been made in Bengal. Thus a number of experiments lasting over several years led to success in devising a machine for cutting conch-shells and so replacing the very laborious manual work formerly required. A machine was also evolved for polishing brass and bell metal articles, and useful machines were designed for hackling jute hemp and also fibre and for binding and marking umbrella sticks. Important improvements in textile machinery designed for the cottage industrialist or small factory have been effected in more than one textile institute. In some cases educational institutes have conducted experiments in new directions. For example at the Serampore Textile Institute experiments have included the weaving of coarse jute and coir fabrics, the spinning of jute coir and hemp waste silk and wool, and the extraction of cocoanut fibres. Efforts were also made to utilize the fibres of water-hyacinth stalks to manufacture string and matting. In the Wood-working Institute at Barilly work has been done on the kiln-seasoning and air-drying of timbers.

The classification of sericultural experiments as industrial investigations is open to question. Our mention may be made here of the activities of Industries Departments in this direction. In Assam the Department has been responsible for extensive research in sericulture devoting attention to planting experiments, the improvement of species by selection and the study of diseases. In Madras the Department of Industries became responsible for sericulture in 1922, and the work has included research into cross-breeding at Coonor. In Bihar and Orissa the efforts made to stimulate the

industry include the leasing of an experimental farm for the planting of mulberry

In connection with some industries, legislation has been utilized to secure funds for research. The Indigo Cess Act* provided, by means of a cess on indigo produced in India, an income of rather over Rs. 40,000 annually, which was expended on more than one line of technical research, the most important being the investigations entrusted to an Indigo Research Chemist specially appointed for a term of years. A small experimental indigo factory was erected at Pusa, and achieved results of considerable value. It was established that the yield of dye from indigo depended on the presence in the water of the steeping vat of adequate numbers of bacteria of the proper type, and a powerful and cheap antiseptic was designed at Pusa to secure the removal of deleterious organisms from the water before it was inoculated with the species required. By 1922 the work in hand had been almost completed and the Indigo Cess Act which had been amended by Act V of 1921, was repealed by Act XXVIII of 1923.

The Indian Cotton Cess Act,† passed in 1923, affords another example of an industry being enabled to tax itself for the purpose of research. The Act imposes a small cess on each bale of Indian cotton exported from India or consumed in Indian mills. The proceeds are paid to the Indian Central Cotton Committee, constituted under the Act, a body including representatives of all the interests concerned and a number of officials, the funds may be "applied to meeting the expenses of the Committee and the cost of such measures as it may with the previous approval of the Governor General in Council, decide to undertake for promoting agricultural and technological research in the interests of the cotton industry in India." Much of the research undertaken is naturally of an agricultural character but the Committee maintains at Matunga Bombay in addition to a Research Laboratory a Spinning Laboratory whose object is to provide accurate spinning tests of Indian cottons and to determine the relation between fibre characters and spinning value.

In the case of lac the Indian Lac Cess Act‡ was passed in 1921 with the object of securing funds for research. India until recently enjoyed a practical monopoly in the production of lac and shellac, but there was and is, a danger of the discovery of a satisfactory

*Act III of 1918

†Act XIV of 1923. Minor amendments were made by Act I of 1924 and Act XVIII of 1925

‡Act XIV of 1921

synthetic substitute forty years ago lac was principally used for the production of dyes and that industry was killed by the use of synthetic dyes. But the production of shellac steadily increased and modern developments have added to its industrial uses. Scientific research may be of the utmost value to the future of the industry and the Act provided for a small export duty on lac the funds so secured were to be placed at the disposal of the Indian Lac Association for Research. The Association was granted a site near Ranchi of about 110 acres on favourable terms by the Government of Bihar and Orissa in 1924 and has erected a Lac Research Institute there with an experimental plantation. Various experiments and inquiries are now in progress in the Institute and in the plantations which have been established by the local Government. The export duty was to be levied for five years in the first instance but in February 1926 the Legislative Assembly recommended its continuance up to the end of 1931. Experiments in the refining of shellac were conducted by the Industrial Chemist in Bengal and improvements were effected in the methods ordinarily adopted. Research work was done at the Government Technical Laboratory in the United Provinces on the bleaching of shellac.

Financial assistance has in some cases been given by Government to agencies engaged in research. The Indian Institute of Science at Bangalore which does a large amount of chemical research of industrial importance, has received an annual grant of a lakh and a half of rupees from the Government of India who participate in its control. An annual contribution amounting recently to £1,200 has been given to the Imperial Institute in London for the furtherance of their work in connection with the investigation of the natural resources of the Empire. In 1921 the Government of India in reviewing the recommendations of the Coalfields Committee offered to assist private investigations into coal washing and the development of firing by powdered coal and low temperature coal distillation. One firm which was in a position to conduct enquiries into the froth flotation process for cleaning Indian coals was granted an allowance of Rs 1,000 a month for twelve months by the Government of India. The published results of the researches showed that many Indian coals could be made to yield a large percentage of improved product but at the present scale of prices improvement by froth flotation is not an economic proposition.

Of more immediate interest to the coal industry is the re-survey of the two main coalfields undertaken by the Geological Survey in the last few years. This was facilitated by the preparation of new topographical maps of the areas by the Survey of India. The geo-

logical survey of the Raniganj field has been completed and that of the Jharia field is approaching completion. A number of other coal-fields have also been revisited and the available information has been brought up to date. The re-survey has included the preparation of estimates of the total amount of coal available and particularly of the amount of coking coal available for metallurgical purposes. To test the possibility of increasing the quantities of coal that may be regarded as reserves suitable for coking, experiments have been made with a certain amount of success upon mixtures of coking with non-coking coals.

A survey was also made of the supplies of sand in portions of the Damodar river available for underground stowing in coal mines. The investigation showed that there are large supplies available and that the consumption is likely to be balanced by replenishment at every monsoon. Other researches relating to coal undertaken by the Geological Survey included an investigation into the specific gravity of Indian coals and their ash contents. One result has been the discovery of a rule by which the prospector can deduce the probable ash content merely by measuring the specific gravity.

The Geological Survey also completed during the period an estimate of the total quantity of high-grade iron-ore in Singhbhum and Orissa. The results of this investigation showed that this portion of India contains reserves of the order of three thousand million tons of high-grade ore which is more than can be smelted by the total amount of coking coal of metallurgical quality known to exist in India, even if the whole amount of such coal were reserved for the iron and steel industry. Certain iron smelting companies questioned the accuracy of the estimates on the ground that some of the ores, though of high grade, are too friable and fine-grained to be utilisable in the blast furnace. Consequently, an officer of the Geological Survey visited the Lake Superior Iron Mines for the purpose of studying the extent to which soft, fine-grained and friable ores are used in American practice and has submitted a report thereon which shows that a surprisingly high proportion of such ores is utilised. Experiments are now being conducted upon the friable iron-ores for the purpose of determining their fineness as compared with North American ores.

Systematic geological mapping has been continued upon the Tertiary tracts of Burma within which petroleum deposits are likely to occur, but without any notable new discoveries. A geological survey has also been made of the oil-shale tract recently discovered in the Amherst district in Lower Burma. A careful examination

was made of the mica mines of the Kodarma tract in the province of Bihar and Orissa with a view to determine whether the mining methods in vogue are capable of improvement. The result of this inspection was to confirm what was already known of the unsound methods by which many of the mica deposits are worked and to draw attention to the necessity of insisting upon the preparation of mine plans. In view of the increasing importance of the refractory minerals sillimanite and kyanite special attention has been given to the occurrence of these minerals in India.

The Industrial Commission considered it necessary that Government should take in hand a systematic survey of the hydro-electric resources of India available for the generation of electrical energy. Prior to the publication of the report the policy of Government had been to leave surveys and investigations of this kind mainly to private enterprise, but at the end of 1918 Government appointed two officers to carry out a preliminary reconnaissance of the water-power resources of the country. These officers were assisted by officers appointed by the provincial Governments and by 1921 three reports had been published giving a fairly complete preliminary survey of the more important sites.

But in the meantime the introduction of the reforms precluded the Government of India from further expenditure in this direction and from April 1921 the continuation of the work had to depend on the activities of provincial Governments. In some provinces particularly Assam and the Punjab the work was continued in the manner originally contemplated and reports were published for Assam in 1923 and for the Punjab in 1924-25. In the latter province the survey was followed by the undertaking of one scheme of great importance—the Uhl river hydro-electric scheme. This project was approved by the Legislative Council in 1924-25 after considerable discussion and work on it was started in the following year. It will render power available for industrial purposes in a number of Punjab towns and in its first stages it was estimated to supply a maximum demand of 36 000 kilowatts at a cost of four crores of rupees. Its designers have estimated that it could be developed so as to supply power to towns as far distant as Delhi and the west of the United Provinces.

In Madras preliminary investigations of several schemes were continued and one important scheme for the development of power on the Palkara river (not far from Ootacamund) was worked out in detail. The adoption of this scheme is under consideration. In the United Provinces several projects have been prepared for generating

RESEARCH AND INVESTIGATIONS

75

electricity in connection with irrigation works. In addition to providing electricity for other purposes these schemes will render power available for industry at cheap rates. Three projects have been taken up (one being already in operation) on the Upper Ganges Canal and a larger scheme estimated to cost 47 lakhs of rupees has been prepared for the approval of the Legislative Council. Some work was done in Burma after the transfer of responsibility to the local Government but no comprehensive survey was undertaken. In Bombay the local Government on the recommendation of a Committee decided in August 1921 that work on the survey should cease forthwith the carrying out of detailed investigations was thereafter left to private enterprise. In Bengal a Committee of officials was appointed in 1921 to consider what measures should be taken to conduct and control the work of the survey. After considering the results of certain local investigations which were directed to the Hill Tippera area round Comilla and Chittagong they reached the conclusion in 1924 that the amount of power available was too small to pay for the costly works necessary to enable it to be developed.

CHAPTER IX

Intelligence and Technical Assistance

It is generally recognized that official agency can perform useful functions in respect of the dissemination of intelligence relating to industry and trade. The formation of the Department of Commercial Intelligence, whose headquarters are at Calcutta, was one of the earlier activities of the Central Department of Commerce and Industry and it has played a steadily increasing part in assisting Indian industrialists. In 1921 a scheme for its expansion and the opening of fresh branch offices was approved but retrenchment led to its abandonment, to a reduction of the existing staff, and to the closing of the Commercial Museum attached to the department. Up to 1921 its functions had been confined to overseas trade, but in 1922, following a suggestion made by the Standing Finance Committee of the Legislative Assembly, it undertook the supply of information relating to interprovincial trade. The main functions of the department are to answer trade inquiries, to keep Government in touch with commercial opinion, to assist Indian firms to establish or extend trade relations with foreign traders and to collect and publish statistics. In respect of mineral inquiries, the Geological Survey of India acts as a bureau of intelligence and a source of expert technical advice available to prospectors, capitalists and the public generally.

In Great Britain the Indian Trade Commissioner's office exists to foster and assist the export trade of India. The Trade Commissioner's primary function is to render all possible assistance to firms and individuals in India who are interested in the sale of Indian goods in foreign, and particularly European, markets. Assistance is also given to firms and individuals in Europe who are importers of Indian goods and who are anxious, or who can be encouraged, to extend their activities in this direction. The work of this office though hampered by retrenchment,* which necessitated its maintenance in an unsuitable building with an inadequate staff, has continued to expand. A recent development was the appointment of a Trade Publicity Officer for trade publicity work in England and on the Continent of Europe. His main work is to make Indian products more widely known by a systematic scheme of participation in fairs and exhibitions.

*The Indian Retrenchment Committee recommended the abolition of the appointment of Trade Commissioner.

A Trade Commissioner was appointed at the end of 1921 to East Africa, but the appointment was abolished in 1923 owing to depression in trade and the need for retrenchment. In 1927 the Government of India decided to assist one of the major industries in the search for markets. A Trade Mission including the Director-General of Commercial Intelligence and Statistics and the Secretary of the Bombay Millowners Association was deputed to the Near East and Africa to survey the potentialities of certain countries as markets for Indian cotton goods and to make recommendations for the encouragement of the export of cotton manufactures from India. The Mission was also instructed to examine the advisability of appointing Trade Commissioners.

Commercial intelligence also occupies the attention of provincial industries departments and particularly in provinces where these departments are well organized there has been a constant stream of sellers seeking purchasers and a smaller stream of purchasers seeking sellers who apply to the departments for information. There are numerous inquiries and applications for advice regarding the sources of supply of materials, the position of the markets, export trade, official regulations and even trade customs and business practice. The answering of these inquiries is only made possible by the constant collection of information to the amassing of that information nearly every activity of an Industries Department makes some contribution.

Publications form an important medium for the dissemination of intelligence and the issue of publications designed to give industrialists information relating to industry and trade is essentially a development of the last few years. The main official periodical is the *Indian Trade Journal*, a monthly issued by the Department of Commercial Intelligence and Statistics. This has expanded in scope and circulation 2,400 copies are now printed every week and the journal has for some years been self-supporting. The *Labour Gazette* produced by the Bombay Labour Office, though primarily devoted to labour affairs, also devotes some attention to commercial matters. In the Punjab an *Industrial Bulletin* was published fortnightly between 1920 and 1923, but the demand for it did not justify its continuation. The *Journal of Indian Industries and Labour* after appearing quarterly for over two years became a victim to retrenchment in 1923. Various reports contain information of value to those engaged in industries.

Surveys of industries have been carried out in some provinces these have for the most part been confined to cottage and minor

industries In Bengal a survey was conducted by five circle officers in 1922 and 1923, the results being published in 1924 in a Report on the Survey of Cottage Industries in Bengal. The report which dealt both with cottage industries and with the smaller factory industries was prepared on a divisional basis, each division being surveyed by a separate officer, within the divisions the industries were discussed in turn. In the United Provinces a survey of industries on a district basis was conducted in 1922-23 by ten officers who had been appointed a few months before undertaking the work as divisional Superintendents of Industries. The officers had little previous experience of their subject and the committee which reviewed the working of the Industries Department in 1925 observed that they did not think that the reports contained sufficient material to form the ground of a provincial handbook on industries. In Madras a survey of cottage industries was initiated in 1927. This also is being done on a district basis but the work has been entrusted to a single special officer. In Bombay a survey of art and crafts was carried out in 1926-27 by an officer specially appointed for the purpose. In Burma a survey of the cottage industries of Mandalay District was conducted in 1921-22, a similar survey of the Mvaungmya district was abandoned on account of financial considerations shortly after it had been begun. The compilation of a directory of trades and manufactures is now being undertaken in the Punjab.

A few surveys of particular industries have been conducted. An expert from England conducted a survey of the vegetable oil industry of the Punjab in 1922 and in his report put forward a number of suggestions for its improvement. In Burma the results of some investigations made into the rice-milling industry in three districts were published in 1922. The lace and embroidery industry was the subject of a survey in Madras and investigations were made by an expert into the match industry in Bengal and Bihar and Orissa.

Miscellaneous publications have been fairly numerous. The *Handbook of Commercial Information* for India, of which a second edition was published in 1924, is designed to assist those interested in the export trade to increase their demands for Indian products. The central Department of Industries and Labour has issued a long series of bulletins, some of which have dealt with specific branches of industry and trade, such as the manufacture of cement, glass, gilt wire and tinsel, paper pulp and paper and some with general subjects such as factory construction and labour questions. A number of bulletins in this series have been devoted to Indian

*The Bulletins of Indian Industries and Labour

minerals. Written by expert geologists, they have dealt in turn with most of the important minerals in India from the industrial point of view. Attention has been paid chiefly to the industrial uses of the minerals, the specifications and standards of quality demanded in the trades concerned, the general methods of the markets and the sources of competing supply. Series of bulletins have also been issued by several provincial departments. These have in many cases made available to the public the results of researches, investigations and surveys and have added substantially to the comparatively scanty literature on Indian industries.

But in addition to rendering available information regarding facts, provincial departments have in most cases gone on to give technical advice and assistance of a technical and general kind. The smaller industrialists in India often undertake enterprises with a singularly poor equipment of knowledge for the purpose, and are consequently faced with difficulties which they find it difficult to resolve. On the one hand, many who enter an industry with little or no previous acquaintance with the subject are apt to assume that their main task is the overcoming of the technical difficulties attendant on production and that the solution of these will bring them in sight of success. As the experienced business man is aware, the battle in most cases only begins when the technical problems have been overcome. On the other hand there are those who embark on an enterprise with some knowledge of business but no sufficient technical equipment. Frequently the small industrialist adds to his difficulties by his anxiety to employ the cheapest rather than the most profitable agents. In the United Provinces the Director of Industries found a clerk assisted by a low-paid mistress in charge of a large concern in which over ten lakhs of rupees had been invested. And even where the equipment is not defective, the minor enterprise cannot afford to retain experts whose services may be required only at rare intervals.

To meet these needs the provincial Industries Departments have undertaken the supply of advice in industrial matters with varying success. In order to function properly in this direction, a department must be provided with a certain minimum of experts and that minimum has not in every case been reached. Departments have had to carry on their work in some cases without a chemist at hand and even without an officer with engineering qualifications. But where the experts have been available, valuable work has been done. It is unfortunately impossible to give any comprehensive summary of work which takes the form of dealing with a multitude of isolated inquiries of all kinds. Some

departments have appended to their annual reports long catalogues giving the subjects of inquiries others have given a few examples of interest some give up the attempt to explain this part of their work in detail. Little can be attempted here beyond mentioning the main branches of work coming under this head.

At the outset the small industrialist frequently requires advice regarding the choice of site and the construction and planning of his factory. Those whose acquaintance with business is limited to the big concern would be surprised to learn of the number of instances in which smaller enterprises have forfeited all chance of success by failure to pay attention to the most elementary considerations in respect of the choice of a site. Factories have been started without ascertaining whether raw materials can be secured at prices which will make it possible to manufacture at a profit buildings have been constructed or purchased which are entirely unsuited for the purpose of a factory. Machinery has been purchased which has proved ill-adapted or in some cases not adapted at all for the work in view. And the arrangement and extent of the plant have been fixed without any close reference to commercial considerations. Industries Departments have assisted industrialists by furnishing plans designs and estimates by advising on the choice of a site and the selection and purchase of machinery. In a number of cases they have been able to satisfy potential industrialists that their own projects were defective and to prevent the outlay of capital on schemes offering no hope of success.

In many cases information is required regarding particular branches of work. The assistance of Industries Departments is invoked by small manufacturers in search of specific raw materials. Recipes are wanted for the manufacture of substances descriptions are required of the processes involved in producing various articles, advice is sought regarding the purification or refining or polishing of products or the improvement or replacement of particular machines.

Frequently difficulties arise in connection with manufacture and assistance is required to overcome them. A few examples from one industry—soap—will illustrate the type of work done. In Bengal a small manufacturer sought advice regarding improvements in the quality of a soap the defects were pointed out and he was given suggestions for improving the product. In Bihar and Orissa a sample of indigenous carbolic soap was analysed and compared with an imported brand the defects were pointed out to the manufacturer. In Madras the Kerala Soap Institute, in addition to pro-

1926-27 the expert helped three lacemakers in manufacturing lac goods. In the United Provinces a soap works which had started in 1925 was compelled to discard a large amount of material. The expert helped the proprietor with the assistance of the Technological Institute at Allahabad to put the works in charge. Not only was it brought to a satisfactory working condition but the whole of the district was benefited.

In the United Provinces the expert has been given in removing defects in the manufacture of cotton yarn a check to enterprises. In the United Provinces the expert was assisted in preventing the export of cotton yarn to the United Kingdom. A pharmer was in difficulties with the manufacture of one of the fermented drugs. The Industrial Chemist was able to trace the origin of the defect and to improve the product at the same time improved the method of manufacture to effect a saving in fuel in the distillation process. In Bombay a firm manufacturing a chemical found that their product was affected by discoloration. Laboratory experiments were made and a method was devised for removing the defect. Occasional opportunity is offered of effecting a substantial improvement in manufacturing methods. In Bengal the proprietor of a shellac factory asked for assistance in improving his product which was made of poor quality. The Industrial Chemist was able as a result of a visit to the factory and an examination of the methods to devise methods whereby the factory could produce fine quality shellac without extra labour and practically at the same cost as before. The manufacturer got a gain of between Rs. 10 and Rs. 15 per maund of shellac; he was enabled to work with 18 ovens against 6 used in preceding year and found that his product was in great demand on account of its excellent quality. In the United Provinces in 1926-27 the oil expert enabled one oil mill to secure a 25 per cent. increase in its output and assisted in reorganizing another so as to effect savings believed to amount to about Rs. 30,000 annually. In a third oil mill alterations in design are expected to effect savings of Rs. 10,000 annually.

In most provinces a considerable amount of analytical work is done on raw materials and products on behalf of private industrialists. This work has been carried out in some provinces by an Industrial Chemist working in the Department of Industries, in others by chemists attached to educational institutions, or by chemists working in connection with pioneer factories or research institutes. As a result of analyses carried out on behalf of manufacturers, it has often been possible to point out improvements that might be effected.

The tanning industry by reason of its importance and the extent to which it is carried on in small scale enterprises offers a big scope for assistance. The smaller tanneries are in many cases ill-constructed and ill-equipped and the owners have often little knowledge of the technical side of the business. In Bengal, the Tanning Institute has been of great assistance to small tanneries. They have been supplied not merely with advice on all branches of their work but with special preparations such as chrome liquor and fat liquor. The Institute has also undertaken on payment at industrial rates the work involved in finishing processes for small tanners. The results obtained in a number of investigations have been introduced to private tanneries, thus a number of tanneries have been enabled to start on tanning lizard skins, a new branch of industry in Bengal, and they have been instructed in the tanning of hunting trophies. Demonstrations are constantly given in tanning methods at exhibitions and elsewhere by the staff of the Institute. In Madras tanners who have any difficulties are able to apply to the Leather Trades Institute for advice and assistance. In the Punjab, improvements were effected in the smaller tanneries by the Tannery Superintendent, demonstrations have been given and the manufacture of chrome leather was started. A model tannery was constructed by Government, an account of its fortunes is given later. In this province it was found advisable to carry assistance a stage further back as it was evident that defective flaying was a serious handicap to the development of the industry. An expert was borrowed from the Civil Veterinary Department to investigate the subject, his recommendations were circulated to butchers and hide merchants and two men were trained as flaying demonstrators. As a result of these demonstrations the quality of hides was improved, and appreciably better prices were secured by those supplying them. In the Central Provinces, a Leather Expert has been employed in demonstrating improved methods of tanning, flaying and curing and has assisted in the starting of a leather finishing factory and a chrome tanning factory.

In some cases the small industrialist is able to carry out some of the processes but cannot economically undertake others. Reference has been made to the finishing of leathers by the Bengal Tanning Institute, in 1925 a sum of Rs 2,500 was received in payment for this work from small tanners. The small match factories in the United Provinces could not afford to instal the machinery necessary to cut the wood and make splints and veneers, and a plant has recently been erected at the Woodworking Institute at Bareilly for the purpose. In order to encourage the use of up-to-date machinery

for oil milling in the United Provinces a demonstration oil-milling plant was installed at the Technological Institute at Cawnpore in 1926. It has given very successful results in milling oil for proprietors of mills and a number of proprietors who have visited it are altering their own installations.

It is perhaps in connection with the erection and working of machinery that assistance is most constantly needed. The erection of machinery is frequently a task beyond the power of the small industrialist and skilled technical assistance cannot always be obtained at a reasonable cost. And the staff employed in supervising machinery is too often incapable of setting right defects which appear, or even of attending to such elementary considerations as fuel consumption. No attention may be given to a machine until it refuses to run at all, and production has then to be suspended. In nearly every province the officers of the Industries Departments have given valuable assistance in connection with the erection, care and adjustment of machines.

In Madras this work has been systematized and has assumed considerable proportions. The erection of machinery is undertaken at a small percentage on the price of the machinery, in 1926-27 70 applications were received for erection and the total machinery erected represented in value 4½ lakhs of rupees. Machine installations are overhauled three times a year for a fee of Rs. 10, in 1926-27 298 industrial concerns used the services of the department in this manner. Repairs are also undertaken and an industrial workshop is maintained where repairs can be effected. In Bihar and Orissa this work has also been undertaken on a systematic basis since 1923, and although on a much smaller scale than in Madras, shows a steadily increasing tendency. In 1926-27 11 erections were undertaken and 10 firms compounded for regular inspection of their machinery. The fees realized amounted to over Rs. 8,000. Elsewhere advice has been given free of charge as a rule by Industrial Engineers or circle officers. Even such simple assistance as is involved in the detection of a broken piston ring or an untrue connecting rod or the making of an elementary adjustment has often been of great value to the small proprietor using a power plant without any knowledge of its mechanism.

CHAPTER X

Government Purchases

The policy of utilizing the possibilities offered by the substantial requirements of Government for various articles to encourage local industries dates from a generation before the Industrial Commission, but that Commission, in its recommendation for the establishment of a central stores purchasing agency in India, pointed out a gap in the machinery of Government which prevented the accepted policy from being carried into full effect. It should be explained here that the term "stores" is generally misapplied (and will be so used in this chapter) to denote supplies. Stores rules and stores policy are ordinarily concerned not with the storing of goods but merely with their supply. Some stores purchasing organizations maintain stocks of goods, others, e.g., the Indian Stores Department, do not.

Following the recommendations of the Industrial Commission, the Stores Purchase Committee was appointed at the end of 1919. Its main purpose was to work out a scheme for the establishment of the agency for the purchase of stores recommended by the Commission, and the resolution appointing the Committee ~~authorized it~~ to enquire and report "what measures are required to enable the Departments of the Government of India and of Local Governments to obtain their requirements so far as possible in India, and what central and local agencies for purchase and inspection should be constituted." It was also asked *inter alia*—

- (1) to devise "a system which will, so far as possible, meet the wishes of local Governments, while securing to the fullest extent practicable the great advantages of centralized purchase, thereby eliminating competition between the different Government agencies, and of an expert and highly specialized inspecting agency, whose advice and assistance will be of no less value to the private manufacturer than to the Government contractor,"
- (2) to provide "clear information regarding the probable benefits which railways could expect from the assistance and advice of a fully equipped stores agency, and as to the lines on which that assistance could be most advantageously afforded."

The Committee had as its President Mr (afterwards Sir) Francis Couchman, a Member of the Railway Board, and the members in-

cluded the Director-General of Stores from the India Office, three business men, and experts with Indian experience of the Army, Public Works, Railways and Finance

The Committee's report was presented in July 1920—

“ As regards stores of Indian origin ”, they wrote, “ the principal ground for complaint at present is that the expressed policy of Government in favour of the purchase, by preference, of such stores, rather than of imported articles, is defeated by the prevailing lack of information, amongst Government officers, of the available resources of the country, by the difficulty they experience in making the close comparison of price now required, and by their defective equipment for making use even of such resources as are within their knowledge. The result is that officers are induced to adopt the line of least resistance, and to obtain stores of extraneous origin when, with better facilities, they might obtain instead suitable goods of Indian manufacture. This reacts prejudicially on the development of Indian industries, and on the economy and convenience of the public service

“ The remedy is to be found in the establishment of an expert purchasing agency in India, equipped with facilities for knowing the manufacturing resources throughout the country, able to purchase efficiently in the various markets of India, and competent to carry out such inspection as may be necessary ”

They recommended the creation of an Indian Stores Department for the purchase and inspection of stores in India. The Department, they suggested, should purchase certain stores, particularly chemical stores (including oils and paints), leather goods, textile goods and timber, for all central Departments and engineering stores for all such Departments except the military authorities, railways and public works. The Indian Department was to absorb the existing organization for the purchase of stores in London and was to utilize it as a branch working under the High Commissioner for India for the securing of such stores as would not be purchased in India. Local Governments and Company railways would be free to employ the Department if they so desired. The services of the Department were also to be available for Indian States and for municipal and other quasi-Government bodies when required.

As regards imported stores, they observed that the existing rules practically prevented their purchase in India. They recommended that the restrictions on such purchase should be abolished and that officers should thus be enabled to purchase imported stores through the agency of branches, agents and dealers in India.

Two members of the Committee submitted a separate memorandum. They accepted the general conclusions as regards indigenous stores quoted above, and the general scheme for the organization of the new Department, except the proposal for the dual subordination of the organization in London to the High Commissioner and the Indian Stores Department. But they did not agree with the proposal to permit the purchase of imported stores through "middlemen" in India. On this point they supported the view of the Indian Industrial Commission, who regarded the prescriptions of the existing Stores Rules to be suitable subject to the addition of a provision regarding purchases from Indian branches of British manufacturing firms.

The control of the Stores Department in the India Office was transferred to the High Commissioner for India almost immediately after the presentation of the Committee's report. The head of this department had previously been directly responsible to the Secretary of State for India, and the change gave the Government of India, through the High Commissioner, control of the working of the Department. But the London Department was not (and is not now) subordinated to the organization set up in India, as the majority recommended. In this respect the Government of India accepted generally the views of the minority of the Committee.

One important question which arose at once out of the Stores Purchase Committee's report related to the modification of the Stores Rules, which laid down the policy to be followed by all agencies for the purchase of stores. The provisional views of the Government of India were published in March 1921. Here again the Government of India were guided generally by the proposals made by the minority of the Committee. Later in the same year, a decision was taken to devote funds to the extent of 150 crores of rupees to railway capital purposes during the following five years, and at the beginning of 1922 the Legislative Assembly adopted a resolution recommending the appointment of a Committee consisting of members of the Indian Legislature to consider the steps to be taken to encourage the establishment of the necessary industries, so that as large an amount as possible of that sum should be spent in India. The Committee was also asked, on the recommendation of

the Assembly, to advise Government regarding the revision of the Stores Purchase Rules. The rules as finally promulgated followed, with a few minor alterations, the draft approved by that Committee, and the new rules came into force in 1924.

The preamble of the rules contained the following statement —

“ The policy of the Government of India is to make their purchases of stores for the public service in such a way as to encourage the industries of the country, so far as is consistent with economy and efficiency. In pursuance of this policy the following rules are prescribed, with the sanction of the Secretary of State for the supply of articles for the public service ”

Two other important changes were made in the rules. In the first place, the rule providing for the local purchase of articles manufactured in India from Indian materials had formerly permitted such purchase where the price was “ not unfavourable ”. The new rule merely prescribed that the price should be “ reasonable,” and thus permitted the purchase of the indigenous article even where a certain increase in cost was involved. In the second place, a new rule was introduced which permitted the purchase in India, subject to certain conditions, of plant and machinery manufactured abroad from branches of approved manufacturing firms.

This last alteration represented an advance in the direction of the purchase in India of imported stores, but it formed an exception to the general principle underlying the rules which remained substantially unaltered. That principle was that generally the Indian article should be purchased in India and the foreign article purchased by the London Department. It was the proposal to maintain this principle which raised the only substantial amount of controversy regarding the new rules and a large section of public opinion who could claim that they had the support of the majority of the Stores Purchase Committee, were in favour of centralizing all purchases in India. Just before the promulgation of the revised rules, this question was raised in the Legislative Assembly which in February 1924 adopted a resolution recommending the abolition of the existing system of stores purchase and the institution in its place of a system of rupee tenders for delivery in India. The Government of India had in 1907 put forward proposals which would have made the purchase in India of imported stores the general rule, but they felt that for the time being it was better to retain the general prescription in favour of purchases of imported stores from the London Department and to increase the number of exceptions as experience was gained. In consequence, the new rules followed the

But the Stores Purchase Committee's Report resulted not merely in an alteration in stores policy but in the setting up of a new agency for carrying out that policy. After consulting local Governments the Government of India established the Indian Stores Department at the beginning of 1922. The Textile Purchase Section, which was started under the Munitions Board and had been continued under the Department of Industries, formed the nucleus of the purchasing side of the department, on the inspection side the new Department absorbed the establishments of the Superintendent of Local Manufactures at Calcutta and of the Metallurgical Inspector at Jamshedpur and the Government Test House at Alipore.

A scheme for its gradual expansion was prepared but financial stringency led to the halving by the Legislative Assembly (with the concurrence of Government) of the grant proposed for the department in March 1922. And it had completed about a year's work on a reduced scale when the Inchcape Committee recommended that its further expansion be stopped until certain conditions (which did not appear likely to be fulfilled at any time in the near future) were satisfied. But this recommendation was rejected by the Government of India and the department's activities have increased steadily. The organization now includes on the purchasing side, branches at headquarters dealing respectively with (1) textiles and leather (2) engineering (3) hardware and miscellaneous articles and (4) intelligence, and provincial purchasing offices at Calcutta, Bombay and Karachi. On the inspection side, the headquarters office supervises the Metallurgical Inspectorate at Jamshedpur, the Alipore Test House and inspecting offices at Calcutta, Cawnpore, Bombay, Karachi and Madras. A small test house has recently been started at Bombay.

The following figures giving the value of stores purchased and inspected give some indication of the progress made —

Year	Purchases	Stores inspected.
	Lakhs of rupees.	Lakhs of rupees
1922-23	165	142
1923-24	167	221
1924-25	259	214
1925-26	267	392
1926-27	399	514
1927-28	373	574

The figures represent, of course only a fraction of the purchases made by Government in India and the conception of the Stores Purchase Committee has not been fulfilled in practice for the Department, generally speaking has been left to make its own way. Local Governments and even departments of the Central Government have been at liberty to utilize the department or not as they think fit so that the expansion of the department has been dependent on its proving its capacity. Charges of 1 per cent on the value of stores purchased and 1 per cent on the value of stores inspected are levied, and indenting governments and departments have been free to form their own judgment regarding the benefits to be gained by dealing with the Stores Department.

This modification of the original conception involved a considerable retardation in the development of the department as envisaged by the Stores Purchase Committee. It is only in respect of textiles that the Department now makes nearly all the purchases of Government stores in India. But it is noteworthy that the local Governments generally have given the Department a large measure of support. The most important purchases made independently of the department have been those of central government departments notably the Railway and the Army Departments which are the main purchasing departments. The fact that the purchases of these departments have not hitherto been made as contemplated by the Stores Purchase Committee has led to an enhancement of the cost, in proportion to the work done, of maintaining the Stores Department and to public criticisms of the policy of Government on this and on other accounts. This is not the place for a discussion of the difficult questions involved. But it may be remarked that the scheme of the Stores Purchase Committee possibly paid too little attention to the difficulty inevitable in setting up a new department, which was intended in part to supplant active and extensive purchasing agencies and yet was not to be directly responsible to the departments maintaining those agencies. And the expansion of the new department left as it was to depend mainly on the efficiency of its service for custom, is a testimony to the value of the work it has done.

It should not be supposed that the work of the Stores Department is confined to complying with such indents for stores as are placed with it. In various directions the department is able to encourage and assist industrialists in India. Indents placed on the Director-General India Store Department London are scrutinised with a view to preventing demands from going abroad for

articles which can suitably be obtained in India. In a number of cases indents on the London Department are cancelled and the order is transferred to Indian firms. More frequently, steps are taken to ensure that future orders are placed in India. Indian suppliers are assisted to improve the quality of their wares to standards suitable for the requirements of the public service, and every effort is made consistently with the economy and efficiency of the various departments to secure the expansion of Indian sources of supply. Thus investigations are constantly made into the possibilities of manufacturing articles not previously manufactured in the country, and the department has been responsible for a substantial widening of the range of articles obtainable in India.

One example may be given of a case where special financial assistance was accorded to enable manufacturers to undertake a supply of materials previously imported. In 1924 the Government of India approved a proposal for assisting manufacturers in India to supply certain great coat cloth and serge drab mixture required by the Army. It was agreed that for three years a premium not exceeding Rs 30,000 annually would be paid to cover the difference in cost between the prices for imported materials and those quoted for the cloths made in India, and it was hoped that if the industry were thus given a start, it would be able after three years to compete on more or less level terms with British mills. The progress made in the first two years was smaller than was anticipated, because the cloth had to be interchangeable with the standard imported cloth and some difficulty was experienced in reaching the prescribed standard. Out of orders for 20,000 yards of cloth in these two years, 17,000 yards were accepted. In consultation with the military authorities, it was then agreed that in 1927 the Indian-made material would be accepted in large quantities for issue to Indian troops (where the question of interchangeability does not arise), and contracts amounting to 60,000 yards in all were placed and the full quantities were accepted. While the period of experiment does not appear to have been sufficiently long to enable the Indian manufacturers to reduce prices to the level of the prices for the imported article, it should now be possible for them to secure orders under the ordinary provisions of the Stores Rules without the assistance of the special bounties that have been given during the last three years. The premia expended during these years amounted in all to Rs 50,000.

In the United Provinces, a Stores Purchasing Department was set up in 1921 and by 1926-27 its purchases had reached a value of 26 lakhs of rupees. The operations of the department met with a considerable amount of criticism in the earlier years on various grounds

and a Committee which was appointed in 1925 to review the activities of the provincial Industries Department was especially asked to report on its working. The majority of the Committee were strongly of opinion that the bulk of the purchases made by the provincial department should in future be effected through the Indian Stores Department. But a minority of the Committee were opposed to this recommendation. The two points of view are summarized in the following paragraphs from a resolution by the local Government which contains the latter's conclusions on the question —

“ The dissentients recommend that all provincial purchases should continue to be made through the provincial Stores Purchase department. They state that the Imperial stores are not under the control of the local Minister for Industries, that the change would deprive the Legislative Council of the opportunity of controlling and criticising the purchases of the department, that they are unaware whether the Imperial stores have given satisfaction, and that they are not satisfied that the Imperial stores can supply articles at cheaper rates than the provincial department. They quote the statement of the stores purchase officer that the Imperial department will take a less sympathetic view than the local department of the industries of the United Provinces, noting that, though the former department has purchased several lakhs worth of drill, it has purchased none in the United Provinces. They further argue that the local department has given great help to jail industries. On the other hand, the majority of the committee assert that the India department has developed its methods considerably beyond those of the provincial department, that its contracts are more complete, that it confers on its customers the great advantage of sharing in large indents, and that it is better able to examine materials of all kinds, as it keeps a test-house at Alipore, and has a more competent inspecting staff. After examining the weighty arguments for and against the existing system, the Government have decided to retain it for the present ”

The example of the United Provinces has not been followed by any other province. The question received some attention in Bombay in 1923 and a proposal to organize a stores purchasing agency was examined in Madras about the same time. The report of the

Director of Industries Madras for 1923-24 stated that "it was definitely decided during the year under review that the proposal should not be proceeded with in view of the experience of another local Government in this direction

The purchase of stationery articles (including paper) has for long been entrusted to an entirely separate agency viz., the Department of Stationery and Printing. The organization maintained in this case is responsible not merely for the purchase of articles on behalf of indentors but also for the storing in most cases of the articles purchased, and a fairly complete system of centralized purchase was in force before the introduction of the reforms. With the introduction of the reforms local Governments were empowered to make their own arrangements for the purchase of stationery as well as of other stores. Four local Governments have taken the opportunity of making their own arrangements. These are Madras and Bombay (which commenced operations by taking over the stores of stationery formerly maintained in these presidencies by the Central Government) Bihar and Orissa and Burma. Other local Governments have continued to secure their supplies through the Central department which has extended its activities by undertaking the supply of stationery articles to State railways and in some cases, to company-managed railways.

CHAPTER XI

Pioneer Factories

The pioneering of industries by Government has for long exercised an especial fascination on the public mind. If it is accepted that the State should take an active part in industrial development, the most immediate method which presents itself of carrying out such a policy is that the State should itself become an industrialist. Reference has already been made to the earlier efforts in this direction and the keen opposition evoked by Lord Morley's orders in this respect furnished a proof of the importance which was attached to such efforts and their extension. The pioneering of industry is now regarded rather as an exceptional than an ordinary function of the State (except by those who would reorganize the whole economic basis of society) but the ventures made in this direction are none the less of distinct interest.

Before dealing with purely pioneering enterprises, it is important to observe that the State takes and has always taken a big share in industry in the direction of supplying its own needs. Close on ten per cent of the factory population is employed in publicly owned factories and a considerable number of miners work in coal and salt mines owned by the State. The 61 railway workshops great and small owned by Government alone employed upwards of 75,000 persons in 1926. The 23 ordnance factories employ over 20,000 persons and the 42 official printing presses owned by Government or local bodies employ over 13,000. The State railways also own coal mines and Government has a monopoly of salt mining. Government factories have in many cases taken the lead in introducing improved machinery and processes and in expanding the industrial production of India. The possibilities of expanding in new directions and introducing new industries in this manner are naturally limited by the limited requirements of Government but they are not yet exhausted.

The biggest enterprise started in the last few years which broke entirely new ground is the Security Printing Press owned by the Government of India which is situated at Nasik in the Bombay Presidency. This press was established for the printing of stamps, currency notes and securities work which could not formerly be done in India. The total capital invested is about sixty lakhs and

the factory began work in 1925, after preliminary experiments had been carried out at Delhi. It is now in a position to meet the requirements of India for stamps and notes at a lower cost than that formerly incurred on their purchase abroad and it embarked on the printing of currency notes in April 1928. Another recent effort in a direction entirely new to India is the manufacture in the Gun and Shell Factory at Cossipore, Bengal, of railway axles from acid steel.

But ventures of this kind stand in a different category from the strictly pioneering enterprise. The aim of the ordinary government factory is not the advancement of private enterprise in many cases it is engaged in work which could be done by private enterprise. Nor does it enter the public markets as a vendor. The pioneering enterprise, on the other hand, is a venture in which Government endeavours to manufacture and sell a product. The product may be (a) one new to a particular province or area, or to India as a whole, (b) an improved form of an existing product, or (c) an old product made by a new or improved method. Examples of each of these three types will be found in the accounts which follow.

A distinction is usually drawn between pioneering and demonstration factories. As a matter of fact the pioneering factory is essentially a particular variety of demonstration factory. Its final aim is the demonstration to private enterprise of the possibility of success in a new line, this involves the overcoming of the initial difficulties, technical and commercial, which frequently act as a deterrent to private industrialists. Such enterprises necessarily involve a distinct risk of failure but while a venture is not started unless there are substantial grounds for expecting a success, even a failure may have some value for demonstration purposes. Normally the intention is that the experiment should not be continued after its success or failure has been clearly demonstrated. It is, however, convenient to reserve the term 'demonstration factory' to factories where commercial success is not the aim, *e.g.* factories designed to educate workers or small industrialists at the expense of the State or to demonstrate only the technical and not the commercial aspects of an industry, and to use the term 'pioneering factory' for commercial ventures. Examples of the former type of activity have been given elsewhere, the accounts which follow all relate to commercial ventures.

The pioneer factory is in most cases not the first but the second step in the endeavour to establish an industry. Before a pioneer

enterprise can be launched with a prospect of success it is often essential to conduct a series of small scale experiments. A period of investigation frequently discloses the existence of serious obstacles in the way and in a number of cases investigations which have been carried no further have been of service as providing experience not merely for Government but for the benefit of private industrialists contemplating similar ventures. In some cases where successful manufacture appeared to be possible, there were no sufficient reasons for Government taking up the manufacture and further progress was left to private enterprise.

The Government of Madras have always taken the lead in pioneering enterprises and the Government Industrial Institute Madras, offers an example both of experiments which led to a pioneer factory and experiments which went no further than the experimental stage. It developed from an industrial laboratory started at Coonoor by Sir Frederick Nicholson and was in its earlier stages devoted to experiments in the manufacture of several products including inks, adhesives and vinegar. It was moved to Madras in 1922, by which time inks had been produced which appeared to be equal in quality to imported inks and their manufacture had commenced. The other lines offered less promise and by 1923 they had been abandoned and the Industrial Institute though still retaining that name has since then been devoted exclusively to the manufacture of fluid inks and ink powders.

The object of the factory was to demonstrate that with the aid of indigenous materials it was possible to prepare writing fluids which would compare favourably in quality with standard imported inks and the factory has shown that such inks can be successfully manufactured under Indian conditions. A large variety of inks of different colours and types has been manufactured. It was found however that the demand for liquid inks was limited and that the use of very inferior ink powders was increasing. In 1923 the factory accordingly took up the manufacture of cheap ink powders and successfully made several varieties of superior ink powder. In the case of fluid inks the factory was endeavouring to supply an article formerly imported but in the later developments it has been in competition with the local manufacturer although producing superior powders. At a later date the manufacture of compressed ink tablets was undertaken and experiments have been conducted continuously in the manufacture of new inks. The aim is to pave the way for private factories which will produce indigenous inks of good quality. The average annual sales for the three years ending

with March 1927 have amounted to about Rs 26,000 and the average net profit has been over Rs 1,000. The factory is now taking up the training of apprentices on scientific lines. The disposal of the product has been facilitated by the fact that the purchases of the Superintendent of Stationery, Madras, have recently accounted for about two-thirds of the sales. Sales are, of course, made to him at strictly competitive rates, but a wider extension of sales would be advantageous.

A somewhat similar enterprise, on a larger commercial scale, is the manufacture of soap. The experimental manufacture of soaps was conducted by Sir Frederick Nicholson and Mr. A. K. Menon, an Oil and Soap Expert appointed in 1913, and a small factory was established for some years in a rented building. In 1921-22 a new factory, now known as the Kerala Soap Institute, was constructed at a cost of about a lakh of rupees. The original scheme was for the establishment of a technological institute, studying the soap industry and allied industries and in due course providing facilities for training students. But the factory has confined its attention to the manufacture of soaps and glycerine, and it was not until 1927 that it was able to take in apprentices. The factory has placed on the market a wide variety of soaps, and has been successful in showing that soaps can be commercially manufactured in Madras Presidency. The venture has shown a small net profit over a period of years. The annual net sales for the three years 1924-25, 1925-26 and 1926-27 have shown an average of about two and a half lakhs of rupees. Marketing has given some difficulty, as satisfactory agents for sales were not easy to find, but an active advertising campaign and the study of local markets have assisted in spreading the reputation of the Institute's products and stimulating the demand for them. The success of the factory has already led to the establishment of a number of small factories manufacturing soap, and a number of the owners of these factories have been assisted and advised by the staff of the Institute. Some small factories have unfortunately been responsible for placing on the market injurious imitations of a toilet soap made at the Institute—an unsolicited testimonial to its popularity.

The glue factory at Madras must be included in the list of pioneer enterprises that failed. The first experiments were made in 1916 and in response to demands from the Indian Munitions Board a satisfactory product was evolved. The efforts to manufacture glue on a commercial scale were continued for a year by a private syndicate, to whom Government leased their buildings and plant.

In October 1921 they relinquished the work and the factory was taken over by Government. The factory worked at a loss throughout, the last complete year's working showing a deficit of Rs 17,000, and it was closed in 1924 when the enterprise was finally abandoned. The technical difficulties attending the manufacture of glue under tropical conditions, which were regarded by many chemists as insuperable, had been largely overcome, but the cost of manufacture was too high to enable the factory to work commercially and there was no prospect of securing a market large enough to enable the cost to be reduced to a level that would render successful competition possible.

The same factor led to the failure of another pioneer enterprise in Madras. The Fruit Preserving Institute at Coonoor started, after a number of preliminary experiments, in 1922. It produced jams and jellies from Indian fruits and also placed on the market canned and bottled fruits. The jams and jellies were of good quality, but there was not a sufficient market to make their production profitable and the Institute never approached the point at which the demand would overtake the economic supply. There was even less prospect of securing an adequate market for the preserved fruits, and the factory was closed in 1926. The average annual loss in the last three financial years was over Rs 20,000, a sum in excess of the average annual sales.

In the Pallapalayam Sugarcane Crushing Factory, another Madras enterprise, the demonstration was one of new methods and not of a new product. The industry in this case was already in existence, the main object was to evolve and demonstrate better methods of conducting it, and in particular the advantage of using power-driven plant. Although useful results were achieved in some directions, notably in the production of an improved furnace for the use of crushed cane as a fuel, the factory was not successful in manufacturing jaggery at a profit for some years. After 1920 a profit was secured and the installation in 1922 of a five-roller mill in place of the three roller mill previously employed gave a substantial increase in the percentage of cane juice extracted. At the end of 1922 the factory was lent for a season to a co-operative agricultural and industrial society free of rent. The society was thus enabled to test the possibilities of the crushing of cane by power, with the result that it has since installed a mill of its own. With the establishment of the possibility of successful crushing of cane by power, the aim of the factory was attained and in 1926 Government

sanctioned its sale to a local co-operative society formed for the purpose of taking it over

The most recent pioneer enterprise of the Industries Department in Madras is the manufacture of printers' ink. This is an entirely separate industry from the manufacture of writing inks and ink powders and was initiated in 1925 in the premises formerly occupied by the glue factory. By 1927 the enterprise had barely advanced beyond the experimental stage but the results of the numerous experiments undertaken give distinct prospects of successful working.

The extensive operations of the Department of Fisheries in Madras include several industrial enterprises. A cannery for fish at Chithyam was maintained for a number of years, but suspended manufacture in 1925 when it became clear that the endeavour to work it on a strictly commercial basis was not meeting with success. The main difficulty was the disposal of the product, the consumption of canned fish is not an Indian habit and a substantial demand could only be secured by going to Burma or further afield. The cannery was handicapped by an unfavourable location and other circumstances. There appeared to be a prospect of its successful working after some reorganization and in 1926 the Government of Madras decided to recommence manufacture under the charge of Sir Frederick Nicholson, but he was unable to undertake the work. The Experimental Station at Tanur was started in 1905-09 with the object of demonstrating methods of fish-curing and developing the fish-oil and guano industry and as a result of its efforts a large number of factories for fish-oil and guano were opened on the west coast of Madras. It was later placed on a commercial basis and in addition to manufacturing oil and guano has undertaken pioneer work in the manufacture of fish meal for sale as a food for cattle, pigs, poultry etc. A satisfactory product has been evolved, but the Indian market is as yet extremely limited.

Efforts made by the Industries Department in Bombay to conduct operations in the manufacture of fish oil and guano were a failure, mainly owing to the reluctance of fish to appear and play their part, the enterprise was brought to an end in 1922. Another unsuccessful pioneering venture in Bombay was the endeavour to introduce steam trawling for fish. A trawler was purchased from England and began working in May 1921. It conducted operations for the better part of a year but by the following February it was evident that the proposition was not a commercial one and the trawler was sold in 1922. The sale proceeds of 36

voyages covering a period of 9 months were not equal to the running costs for two months, exclusive of interest on capital, depreciation and repairs. The absence of cold storage (introduced into the market in the following year), the fact that a large proportion of the fish caught did not meet the popular taste, severe climatic conditions and high supervisory expenses combined to ensure failure. The results of the experiment were published and in the following year a private firm experimented with a steam trawler for some months, but failed to secure success. The Madras Government in 1926 purchased a second-hand trawler for the purpose of exploring the possibilities of deep sea fishing. It commenced working in 1927.

An objection on the ground of interference with private enterprise led to the closing of a semi-commercial factory in Bombay. Experiments in the Sir J. J. School of Art in the manufacture of brown teapots were brought to a successful conclusion in 1921 and a scheme was approved for the production of flooring tiles and teapots. Machinery was obtained from Europe and a factory started at the School of Art in 1923. But in the following year a complaint regarding the competition set up was received from the proprietor of a pottery in Kathiawar, and after an inquiry by the Director of Industries, the working of the factory was stopped.

In Bihar and Orissa the Department of Industries prepared in 1921 a scheme for a sugar-cane factory in South Bihar. There were several factories in North Bihar but uncertainty as to whether the cultivators would be willing to sell cane to the factory had prevented capitalists from starting a factory in what was, in other respects, a promising area. The local Government believed that this obstacle could be overcome and in January 1922 the Legislative Council adopted an official resolution recommending the starting of a Government factory, the project, which was to cost four lakhs of rupees, received warm support. The necessity of revising the estimates prevented action in that year and in August 1923 the Legislative Council was asked to approve a revised scheme costing five lakhs of rupees. The revised scheme had been approved by the Board of Industries, but on this occasion opposition in the Council was almost as general as approval had been eighteen months before and the proposal was rejected without a division. The members who spoke against the scheme voiced doubts as to its soundness and emphasized the danger that the factory would compete with private enterprise. The scheme was accordingly abandoned, the course of events in the sugar industry in the next few years provided arguments against reviving it.

The Blanket Factory at Gaya furnishes an example of an endeavour to combine in one institution a commercial enterprise and a demonstration factory. Its main object was the training of young men of the shepherd class to use modern weaving appliances but it was also hoped that it would be able to produce more durable and cheaper articles than those which were made locally. Starting at the end of 1922, it had difficulty in securing yarn and its product met with severe competition. The accounts showed a steady loss, the total loss was over Rs 6,000 in less than two years, and in 1924 the Director of Industries decided to close it. The necessity of training weavers was a handicap and experience elsewhere has shown that an educational institution can seldom be made a commercial proposition. In 1925 the factory was reopened by Government (it had previously been financed by the District Board) on a reorganized basis as the Gaya Wool-weaving Institute. The attempt to demonstrate commercial results was abandoned and the institute was maintained at the expense of Government with a view to training the local weavers and assisting a cottage industry which is in danger of dying out.

The primary object of the demonstration Match Factory established by the Bihar and Orissa Government at Gulzarbagh was to see whether good matches could be made in India from Indian woods at a profit. Match-making on a small scale had been attempted by a number of individuals, but without much success. The Director of Industries, in his report for 1922-23, referring to these efforts, wrote—

“ It is easy to produce a good match from Indian wood in India. Several of these pioneers are producing matches which are satisfactory in every way and strike during the rains just as well as at any other time. Most, if not all of them, however, have committed many mistakes. They have not secured a proper supply of wood, they have put down their factories in wrong places, they have bought unsuitable machines and are trying to do without others equally necessary. Several of them also have no knowledge of the proper method of making match-heads. In fact, almost every mistake into which ignorance or inexperience could lead them has been made. Yet there seems an excellent opening for match-making in India ”

The position was investigated by an expert in the subject and after considering his report, the local Government decided to open

a factory The primary object was "to see whether good matches can be made in India from Indian woods at a profit in a well-equipped factory", the factory was to demonstrate the working of good match-making machinery and would be available to train persons desirous of instruction in match manufacture It was also "to enable Government to give advice with confidence to persons who require it" As a commercial venture the factory has not yet achieved success From the start it met with one of the difficulties mentioned by the Director in connection with private factories, *viz*, failure to secure a proper supply of wood The factory started in January 1926 but unsatisfactory supplies of wood led to its closing down twice during that year for periods aggregating over four months Some of the wood was of bad quality and the factory also suffered from inefficient labour The sale prices realized fell far short of the anticipated prices, and the accounts up to March 1927 showed a considerable loss

The Tannery built by the Punjab Government at Shahdara, near Lahore, was intended to be a Model tannery The majority of the tanneries in the Punjab were badly designed, poorly equipped and inefficiently worked The Government tannery was the first tannery in the province completely equipped with machinery, it was to exhibit the commercial working of tanning by modern methods, and to serve also as a training ground for experts A certain amount of the machinery was acquired in 1922 and building commenced in 1923, the tannery was opened in February 1925 It encountered unexpectedly heavy losses from the start, and two years sufficed to demonstrate that it could not be continued as a commercial concern The question then arose of continuing it purely as a demonstrational and instructional centre, but it was built and provided with power on a much larger scale than was necessary for such purposes and Government reached the conclusion that the probable results did not justify the heavy expenditure that would be incurred It was therefore decided in 1927 to close down the tannery

The transfer in the United Provinces of two pioneer enterprises to private management, which was effected during the period under review, is of particular interest as affording thereafter an example of State shareholding in private concerns The factories (which utilize the same power machinery and occupy adjacent premises at Bareilly) were started in 1918-19 One, a turpentine and resin factory, proved successful, while the other, a sawmill and turnery, involved heavy losses under Government management

In both cases an investigation indicated that the system of financial control inseparable from State management acted as a handicap to successful working and in 1924 the factories were transferred to the Indian Turpentine Company, and the Indian Bobbin Company respectively, the companies being organized by a syndicate of business men. In each case Government retained part of the share capital and other interests and were allotted a representative on the directorate.

The Turpentine Company has prospered—so much so that, although the local Government have received a lakh of rupees in three years as their share of the profits, they have been subjected to criticism on the ground that the terms of transfer were unduly favourable to the syndicate—a view accepted by a majority of the Legislative Council in the debates on the budget for 1928-29. The Bobbin Company on the other hand has had a chequered career. It concentrated on the manufacture of bobbins and installed a considerable amount of new machinery. But after receiving a loan of Rs 80,000 from Government in 1925 in order to enable it to build up stocks, it had to apply for further assistance early in 1926 with the result that Government considered it necessary to write down their debentures by a sum of Rs 1,65,000. Later in the same year, a fresh difficulty arose from the fact that the stock of bobbins built up in Bombay failed to withstand the Bombay climate and it became increasingly unlikely that bobbin manufacture would prove a successful proposition. Later, the Company's difficulties were increased by the Company's bankers foreclosing for debts outstanding on overdrafts. Government were able, however, with the co-operation of the Turpentine Company and of a private concern, to secure the reconstruction of the company with a view to its concentrating on timber extraction. This line appears to offer better prospects than the manufacture of bobbins, which has been abandoned for the present.

It seems probable that with the increase of industrial enterprise in India the field for successful state pioneering factories has contracted and will contract further. In 1926 the Government of Madras, who have to their credit the only definite successes of the last few years, decided that the experimental work of their Industries Department should not ordinarily go beyond the laboratory stage, and that pioneer manufacture should be left mainly to private enterprise in the future. And as the next chapter will indicate, there have been developments of some importance towards a policy of assisting private enterprise with public funds.

CHAPTER XII

Financial Assistance

The adoption of a policy of assisting private industrialists from public funds may be said to be a result of the recommendations of the Industrial Commission. That body was impressed by the difficulties which faced middle-class industrialists in securing capital. Complaints were numerous that the public were unwilling to invest and that the banks were difficult to satisfy, and that in consequence the development of sound concerns was seriously retarded. To overcome the difficulty the Commission recommended a number of measures. They contemplated the adoption of a scheme of industrial banks, but until such banks were in existence they suggested that Government might give guarantees of credit, guarantees of dividends, loans, agreements to purchase output, contributions to share capital and facilities for the hire-purchase of plant. Financial assistance was given in some provinces before the Reforms, for example in the United Provinces loans were given on easy terms to a number of factories. But it was not until the Reforms were introduced that provincial Governments found themselves in a position to formulate their own policy in the matter.

Up to the end of 1927, three Legislative Councils had passed Acts regulating the grant of financial assistance. In November 1922 the Minister in charge of the Industries Department in Madras introduced a State Aid to Industries Bill. The Bill received warm support from representatives of all sections of the public, and it was passed with certain amendments in the following month. An important amendment made after introduction was one providing that the local Government should not give aid to any industrial business or enterprise except in accordance with the provisions of the Act, so that the Act delimits the powers of the local Government to give financial aid to industrialists. As the Madras State Aid to Industries Act, 1922*, the Bill became law in 1923.

The industries to which assistance may be given under the Act are limited to new or nascent industries, industries to be newly introduced into areas where such industries are undeveloped and cottage industries. The Act set up a statutory Board of Industries to assist Government in dealing with applications for state aid. The forms

*Madras Act V of 1923

which state aid may take include loans, guarantees of credit, subsidies, subscriptions to shares or debentures, guarantees of dividends and grants on favourable terms of land or materials belonging to Government. Loans (including guarantees of credit) can only be given up to 50 per cent of the net value of the assets of the enterprise receiving assistance, and they are to be secured by a mortgage or floating charge on the whole assets. In the case of loans amounting to over two lakhs of rupees, the local Government are required to take power, by the appointment of Government directors or otherwise to ensure such control over the assisted enterprises as is necessary to safeguard their interests, and similar action can be taken where smaller loans are given. Recipients of state aid are subjected to restrictions in respect of the distribution of profits and money due to Government can be recovered in the manner provided for the recovery of arrears of land revenue.

Up to June 1928 seven applicants had received assistance under the Act the enterprise receiving much the largest amount of assistance being the Carnatic Paper Mills. This company received a loan of Rs. 4,00,000 in 1925 two officials being nominated to the Board of Directors for the period of the loan and a lease was given of certain forest lands for the supply of bamboos. The proceeds of the loan were to be applied to clearing the company's liabilities and it was hoped that the grant of a substantial loan of this character would engender public confidence in the enterprise and stimulate the flow of capital. But this hope was not fulfilled and the company were compelled to apply for further assistance. Loans amounting to a further sum of Rs. 74,000 were given up to the end of March 1928 and Government also guaranteed an overdraft of Rs. 1,34,000 due to the Imperial Bank of India. By the middle of 1928 the company had not reached the position of being able to commence manufacture and Government took possession on account of its failure to meet its liabilities. Government then commenced negotiations for the disposal of the concern, and these negotiations and the relations of Government with the company formed the subject of a debate in the Madras Legislative Council in September 1928, when an adjournment motion was carried against Government. In the course of the discussion, the Finance Member of the Madras Government observed,

"it was perfectly clear that there was something radically wrong with this concern started and commended as a promising venture, that the machinery was not suited for the purpose for which it was intended and that the estimates as to cost and the calculations as to the particular kind of paper for which this machinery was

adapted were incorrect. The question of markets had not been properly examined.

The six other recipients of aid under the Act have received loans on a much smaller scale. A firm of silk cloth manufacturers were given a loan of Rs. 50,000 to enable them to undertake the preparation, twisting and dyeing of silk for handloom weaving. The business has been making good progress and instalments have been promptly repaid. A co-operative agricultural and industrial society received a loan of Rs. 18,600 to develop the industries they had undertaken viz. the decortication of groundnuts, the hulling of rice and the crushing of sugar. A company owning sawmills was lent Rs. 9,600 for the purchase of a vertical band saw and the owner of a rice mill was lent Rs. 5,000 to enable him to add two cotton gins to his factory. The proprietor of a match factory who required working capital to enable him to operate his factory has been given a loan of Rs. 20,000 and a dye works syndicate was given a loan of Rs. 10,000 for development purposes.

A recent report of the Industries Department in Madras observes that while the results cannot be said to have fulfilled expectations, the period during which the Act has been in force has been too short to justify a definite expression of opinion as to whether the Act is likely to realize its object of accelerating the industrial development of the Presidency. But there are indications that the restrictions imposed on the grant of state aid are unduly rigid in their application to cottage industrialists and other small scale industrialists, very few of whom have applied for assistance. Applicants of this class cannot ordinarily show assets (as the Act requires) equivalent to double the amount of the loan for which they apply, nor can they reasonably be required to maintain detailed and audited accounts and to furnish the various returns required. The local Government have accordingly published a Bill to amend the Act. The Bill if passed, will make it possible to relax the present requirements regarding assets and accounts and returns in the case of cottage industries and enterprises with a capital of less than a thousand rupees.

The Punjab Industrial Loans Act which also became law in 1923 is a much less elaborate measure than the Madras Act. It provides only for assistance in the form of loans and the detailed provisions governing the grant of loans are left for the most part to rules. The principal change made in the law by the Act was the introduction of a simple procedure for the recovery of loans and interest due on them. The powers of the local Government to grant financial assistance to industries otherwise than under the Act are not expressly restricted. The Act has been sparingly used. No loans appear to have

been given in 1924-25 or 1925-26, in 1926-27 six applicants received loans of Rs 5,000 each

Later in the same year, the Bihar and Orissa State Aid to Industries Act was passed. This measure, as originally introduced in the Legislative Council, differed in important respects from the Madras Act. It dealt only with some of the forms of state aid covered by that Act, included provisions for the supply of machinery on the hire-purchase system, and did not limit the power of the local Government to grant aid otherwise than in accordance with the provisions of the Bill. In the course of its passage through the Council, however, it was substantially amended, and as finally passed, it follows the Madras model fairly closely. The most important variation is the inclusion of a number of provisions relating to the supply of machinery on the hire-purchase system.

The largest amount of assistance so far given under the Act to one concern is Rs 5,00,000 which represents the amount of debentures taken in 1924-25 by the local Government in Indian Steel Wire Products, Ltd. One of the conditions of the purchase of the debentures was that the assets of the Company and its share capital should be written down by more than 50 per cent. The company started work in December 1925, but it was unable to work up to its full capacity, an important part of its plant remained idle, and it did not appear to have sufficient capital to secure economic development. In his report for 1926-27 the Director of Industries noted that the company "is still in a bad way and it cannot find sufficient capital to work the factory regularly and produce an economic output."

In another case in the same year Government sanctioned a cash credit of Rs 75,000, which has been reduced by Rs 5,000 a year in the subsequent two years. A small rice hulling plant was purchased by Government and worked experimentally on condition that it would be taken over by a private individual if it worked satisfactorily. The tests were successful and the machine was transferred, the proprietor repaying the cost in full. In the same year a match manufacturing company were given under the hire-purchase system match-making machinery worth over Rs 4,000. They were able to start work in February 1926, but have had to contend with serious difficulties, and have not met their obligations under the contract with Government. In 1925-26 a loan of Rs 40,000 was granted for the development of a fruit canning business, but the owner found the results unsatisfactory since, to quote the Director of Industries, "against all his expectations based upon war time demand the products found very little sale in India." A machine for husking *masur* was supplied on

the hire-purchase system. More recently a number of other applications for credit or machinery have been sanctioned.

In some other provinces the question of legislating to regulate the grant of State aid to industries has been under consideration for some time. A draft Bill on the general lines of the Madras Act, prepared in the United Provinces was published by the Committee which examined the working of the Industries Department in 1925. In Bombay the question of undertaking legislation on the lines of the Madras State Aid to Industries Act was considered at one time by the Advisory Committee on Industries, but the Committee were divided on the question and no Act is in force. Bills on the general lines of the Madras and Bihar and Orissa Acts were introduced in 1923 in the Legislative Councils of Bengal and the Central Provinces. A feature of the Central Provinces Bill is a provision for 'the grant free of charge or on favourable terms of the services of Government officials or experts for starting or advising an industry.' But the absence of legislation does not prevent local Governments from granting financial assistance to industrialists and indeed the Government of the United Provinces where there is no Act on the subject have given more financial assistance to industries than any other local Government.

Here the question of establishing an industrial bank was examined in 1921-22 by a Committee appointed by Government. The Committee decided against the establishment of such a bank, but they were of opinion that the task of supplying small industrialists with capital upon easy terms in approved cases should be undertaken by Government and recommended the appointment of a Board of Industrial Loan Commissioners who would be responsible for making advances from a sum placed annually at their disposal by Government. The report of the Committee was published and after considering criticisms the local Government adopted a scheme based upon, but differing in some respects from, the proposals of the Committee. A Board of the type suggested by the Committee was established in 1922 but its functions are advisory and the responsibility of deciding what loans should be given rests with Government. In addition to loans, sums are distributed in the form of grants the allocation of the funds available for distribution in this manner rests with the Board of Industries.

Between 1922 and 1927 five fairly large loans have been given and six smaller loans. The larger loans comprise —

Rs 6,00,000 to the Lucknow Sugar Works, Ltd.

Rs 4,00,000 to the Karaundia Development Corporation, Ltd

Rs 1.20 000 to the Shri Maha Lakshmi Sugar Corporation, Ltd

Rs 1,00,000 to the proprietor of a glass works

Rs 80,000 to a Bobbin Company

The Lucknow Sugar Works were unable to fulfil the terms of their original agreement which was made in 1922 and by the end of 1925 arrears of interest amounted to Rs 1,76,000. A fresh arrangement was subsequently made for the repayment of the capital and interest in annual instalments, but the Company failed to pay the amounts due under this agreement and agreed at a later stage to pay in monthly instalments. These, however, have not been regularly paid recently. The Karaunda Development Corporation went into liquidation in 1927, owing Government a sum amounting with arrears of interest to about five and a half lakhs of rupees, in this case it is unlikely that Government will recover any substantial amount. The Shri Maha Lakshmi Sugar Corporation also defaulted, and Government had to extend the dates for payment. This Company also is in arrears with its instalments. The Glass Works have paid regularly, but it is not possible yet to say that the loan has achieved its purpose, viz, the establishment of the manufacture of sheet glass. The bobbin factory assisted was the factory to which reference has been made in the previous chapter and the question of writing off the loan is under consideration.

Passing to the smaller loans Rs 12 000 was given to an ink manufacturer in 1922-23 for the manufacture of lithographic inks, the borrower defaulted, but instalments were recovered at later dates from his surety. Rs 22,000 was lent in 1924-25 to a printing concern for purchase of new type casting machinery on a representation from the company. Government suspended payment of instalments of the principal for two years. Rs 2,000 was lent in 1925-26 for the preparation of a working model of a machine invented by the borrower, the experiment was unsuccessful. Rs 5,000 was lent in 1925-26 for starting a match factory, and the same borrower applied for a further loan in 1926-27 and received Rs 5 000 more. In this case, as in the case of Rs 1 000 lent to another industrialist in 1926-27, it is too early to measure the results. A loan of Rs 300 given for purchasing a hosiery machine in 1921-22 was repaid in full. Loans are also given to smaller industrialists through co-operative societies. This scheme was introduced in 1924 and a total sum of Rs 40,000 has been advanced in such loans in the last three years.

The sums disbursed in the form of grants in the United Provinces in the six financial years between 1921 and 1927 have amounted in the aggregate to over Rs 1,29 000. For the most part, the grants are given to those endeavouring to start new factories, for example the grants in 1926-27 included three amounting to Rs 12,000 granted to

four ex-students of the Technological Institute for starting factories for toilet and textile soaps, chrome leather and tinctures

In Burma financial expenditure on a substantial scale was incurred on behalf of one company, the Burma Spinning and Weaving Company, Limited. This company which was founded in 1921 erected a ginning and spinning mill at Myingyan, spending about Rs 25 lakhs, of which Rs 15 lakhs was borrowed at interest rates of 16 per cent and 20 per cent per annum. The mill could not be profitably worked with such heavy interest charges and in 1923 the company applied to Government for a loan. Following a resolution in the Legislative Council, Government granted a loan in 1924 of Rs 15,00,000 at 6 per cent per annum, and obtained a mortgage on the property and personal collateral security from the directors for half the loan. The company paid the 1925 instalment of interest after some pressure and in the same year a resolution was moved in the Legislative Council recommending that Government should give an annual bounty to the company of any interest it could not pay. The resolution was withdrawn after it had been opposed by Government. The company failed to make the 1926 payment of interest and Government then agreed to postpone this payment for a year on certain conditions, but the company later in the year asked Government to take over the property in full satisfaction of their loan and the interest on it. This proposition, which if adopted would relieve the Directors of their personal liability of Rs 7½ lakhs, was put before the Legislative Council in a non official resolution in 1927, and was supported on the ground that the alternative of closing the mill would be injurious to cotton producers in Burma. The motion was carried and the Government of Burma, as mortgagees, took over the property in March 1927 in full settlement of their claims, which amounted to about Rs 16½ lakhs. After calling for tenders, they accepted, later in the year, an offer of Rs 7 lakhs for the mill. The net loss to Government on the transaction, after allowing for other assets realized, was Rs 8,38,000.

In Assam small loans have been granted under rules framed by Government in 1922. Thus in 1925-26 the loans given to industrialists included Rs 5,000 for the development of an oil and rice mill, Rs 700 for starting a leather working shop, Rs 700 for the establishment of a weaving factory, Rs 500 for purchasing implements for manufacturing gold and silver ornaments and Rs 500 for the completion of an automatic loom invented by the borrower. In Bengal small loans have been systematically given to ex-students of weaving schools at nominal rates of interest to enable them to set up in business. The result has been the establishment of a number of small dyeing and

weaving factories In Bombay, in 1922-23 a loan of Rs 5,000 was granted without interest to enable the owner of a weaving factory to erect buildings in which improved looms could be installed and utilized for giving instruction in weaving And in 1925-26 a loan of six lakhs of rupees was given to a sugar manufacturing concern, which had commenced operations a few years before, and required additional capital to enable it to continue operations Efforts to raise capital in the open market had proved unsuccessful The loan was granted for a short term at a commercial rate of interest

As a result of the reforms, the powers of the Central Government to give financial assistance to industrialists were severely limited The steel industry has received bounties to an extent far exceeding the amounts given or lent to industry by all local Governments during the period, particulars are given in a later chapter Apart from the bounties granted in pursuance of a policy of protection, assistance has only been given by the Government of India in one or two special cases The Calcutta Soap Works were granted in 1923 a loan of Rs 25 000 in order to enable it to undertake the manufacture of dynamite glycerine the loan was to be repaid in ten annual instalments Plant was secured from abroad for the purpose, but before it was erected, the Company became involved in financial difficulties and it went into liquidation in 1927 Only one instalment of the loan had been repaid, and it is unlikely that Government will be able to recover more than a portion of the money lent

In 1924 an arrangement was made with a paper mill company, which, in essence, involved the loan of public money for a limited period The company had successfully tendered for the supply in 1924-25 of substantial quantities of paper to Government and Government agreed to take, in advance of their immediate requirements, paper up to the value of Rs 8,00 000, and to make immediate payment for the same, subject to a discount of $6\frac{1}{2}$ per cent The paper was stored at the risk of the company, and when it was taken out of store by Government a refund was made to the company of a portion of the discount corresponding to the unexpired portion of the year The transaction was thus equivalent to a loan of money at $6\frac{1}{2}$ per cent for various periods up to one year At the time the paper industry was in difficulties owing partly to foreign competition, and the question of its claim to protection was under consideration This loan affords perhaps the only example so far of a substantial loan to industry which has been repaid on the terms originally arranged having achieved the purpose in view, and it was exceptional in that the period of the loan was extremely short and the money was advanced against actual material of an equivalent value

CHAPTER XIII

Protection.

(a) *The control of fiscal policy*

If the Reforms made it difficult or impossible for the Government of India to assist Indian industries by some methods, they were destined to provide the Central Legislature and the Central Government with a method of granting State assistance hitherto untried in India. For more than a generation articulate Indian opinion had been almost unanimously in favour of a policy of fiscal protection, while Government had consistently pursued a policy of free trade. The merits of the controversy cannot be discussed here, but there is no doubt that the demand for protective tariffs was stimulated by the fact that India had no control of policy in the matter, and the popular belief that the prevailing policy had not been dictated solely by regard to Indian interests imparted constant bitterness to the discussion of the question.

The situation just before the Reforms is summarised in the following passage from Montagu-Chelmsford report —

“ Desiring industries which will give him Indian-made clothes to wear and Indian-made articles to use, the educated Indian looks to the example of other countries which have relied on tariffs and seizes on the admission of even free traders that for the nourishment of nascent industries a tariff is permissible. We do not know whether he pauses to reflect that these industries will be largely financed by foreign capital attracted by the tariff although we have evidence that he has not learned to appreciate the advantages of foreign capital. But whatever economic fallacy underlies his reasoning these are his firm beliefs and though he may be willing to concede the possibility that he is wrong he will not readily concede that it is our business to decide the matter for him. He believes that as long as we continue to decide for him we shall decide in the interests of England and not according to his wishes, and he points to the debate in the House of Commons on the differentiation of the cotton excise in support of his contention. So long as the people who refuse India protection are interested in manufactures with

which India might compete Indian opinion cannot bring itself to believe that the refusal is disinterested or dictated by care for the best interests of India "

The authors of the Report did not overlook the necessity of considering the question from the point of view of the masses of the population but they stressed the importance of taking proper account of the views of educated Indians

The question of the control of tariff policy was specially considered by the Joint Select Committee on the Government of India Bill in 1919 Dealing with the relations of the Secretary of State to the Government of India, they observed that so long as the Governor-General was responsible to Parliament, no statutory change could be made, but they suggested that the Secretary of State might reasonably consider that his responsibility to Parliament should involve intervention only in exceptional circumstances " in matters of purely Indian interest where the Government and the Legislature in India are in agreement " And they added —

" This examination of the general proposition leads inevitably to the consideration of one special case of non-intervention Nothing is more likely to endanger the good relations between India and Great Britain than a belief that India's fiscal policy is dictated from Whitehall in the interests of the trade of Great Britain That such a belief exists at the moment there can be no doubt. That there ought to be no room for it in the future is equally clear India's position in the Imperial Conference opened the door to negotiation between India and the rest of the Empire, but negotiation without power to legislate is likely to remain ineffective A satisfactory solution of the question can only be guaranteed by the grant of liberty to the Government of India to devise those tariff arrangements which seem best fitted to India's needs as an integral portion of the British Empire It cannot be guaranteed by statute without limiting the ultimate power of Parliament to control the administration of India, and without limiting the power of veto which rests in the Crown and neither of these limitations finds a place in any of the Statutes in the British Empire It can only therefore be assured by an acknowledgment of a convention Whatever be the right fiscal policy for India for the needs of her consumers as well as for her manufacturers, it is quite clear that she should have

the same liberty to consider her interests as Great Britain, Australia, New Zealand Canada and South Africa. In the opinion of the Committee, therefore, the Secretary of State should as far as possible avoid interference on this subject when the Government of India and its legislature are in agreement and they think that his intervention when it does take place should be limited to safeguarding the international obligations of the Empire or any fiscal arrangements within the Empire to which His Majesty's Government is a party.

The question was taken up by the reformed Central Legislature in its first session. A resolution was adopted in the Council of State in February 1921 asking for the grant to the Government of India of "full fiscal autonomy subject to the provisions of the Government of India Act", and a few days later it was announced in the Legislative Assembly that a Fiscal Commission would be appointed "to examine with reference to all the interests concerned the tariff policy of the Government of India, including the question of the desirability of adopting the principle of Imperial Preference, and to make recommendations". In the following June the Secretary of State accepted the principle recommended by the Joint Select Committee and for the first time the effective control of fiscal policy passed to India.

(b) The Fiscal Commission

The Indian Fiscal Commission began its work in November 1921. It had as its President Sir Ibrahim Rahimtoola and the majority of the ten members had taken a prominent part in industrial enterprise in India. After a comprehensive tour of India in the course of which a large amount of evidence was taken, the Commission presented its report in July 1922. On the question of the importance of industrial development the Commission had little difficulty in reaching the conclusion that such development would be "very much to the advantage of the country as a whole". They believed that it would result in the creation of new sources of wealth and the accumulation of capital with a consequent enlargement of the public revenue and of the avenues of profitable employment for labour that it would conduce to economic stability and that it would also have the effect of "stimulating the national life and developing the national character".

The Commission were unanimous in finding that the adoption of a policy of protection was in the best interests of India. The

majority favoured a policy which they described as "protection with discrimination", the discrimination to be exercised in the selection of industries for protection and the degree of protection afforded. The main safeguards which they proposed lay in the conditions which, in their view, industries should satisfy before they could secure protection. These were —

- (i) That the industry possesses natural advantages,
- (ii) That without the help of protection it is not likely to develop at all, or not so rapidly as is desirable, and
- (iii) That it will eventually be able to face world competition without protection.

Claims for protection were to be examined by a Tariff Board, so constituted as to render it independent of political influence and to enable it to advise Government and the Legislature on tariff policy.

The Chairman and four members of the Commission, while entirely in favour of a protective policy, did not endorse these detailed proposals. They recorded their view that no qualifications or limitations should be made a condition precedent to the adoption of a policy of protection, and the only discrimination which they desired to see was "such discrimination as may be considered necessary by the Government of India and the Indian Legislature". While agreeing in the proposal to constitute a Tariff Board, they recommend that two of the three members should be elected by the non-official members of the Indian Legislature and that the Board should also include two assessors representing the leading Commercial and Mercantile Associations.

The Commission made a number of other proposals including one for the abolition of the cotton excise duty. Other recommendations designed to benefit Indian industries included a proposal to subject goods belonging to Government to customs duties†. They were opposed to the placing of obstacles on the inflow of foreign capital, but endorsed the policy of the Government of India in restricting concessions to firms registered in India with rupee capital and willing to train Indian apprentices. The minority wished to impose these conditions by legislation on all firms establishing industries behind the tariff wall.

(c) *The adoption of protection*

The main question came before the Legislative Assembly in February 1923, when Mr Jammadas Dwarkadas, a member of the

*Report, page XV

†This was embodied in the Sea Customs (Amendment) Act, 1924 (VIII of 1924)

Fiscal Commission, moved a resolution advocating the adoption of a policy of protection, "its application being regulated from time to time by such discrimination as may be considered necessary by the Government of India with the consent and approval of the Indian Legislature" On behalf of Government, Mr (afterwards Sir) Charles Innes moved an amendment involving the acceptance in principle of "the proposition that the fiscal policy of the Government of India may legitimately be directed towards fostering the development of industries in India" The amendment embodied the principle of discrimination with due regard to the criteria laid down by the majority of the Fiscal Commission and recommended the appointment of a Tariff Board for a year in the first instance. The amendment after a full debate, was adopted.

As Mr Innes had indicated in his opening speech the Government of India had not accepted this great change in policy "without deep searchings of heart and without forebodings" Of the keen desire of Indian industrialists and the educated middle classes for protection there had never been any doubt. But the masses of the country were agriculturists and the main part of the sacrifice involved in the abandonment of free trade would fall on them. They were for the most part non-vocal but those agriculturists who were able to make their voices heard were naturally apprehensive regarding the burden that protection would place on them. During the debate the Government were accused by one member speaking on behalf of agricultural interests of yielding to the clamour of the Press and of those who could speak loudly and neglecting the interests of the masses in the matter. And Mr Innes remarked significantly "If the agricultural classes which form the bulk of the population in India were fully able to grasp the issues involved in this question of free trade versus protection, and if they were able fully to bring their influence to bear upon this Assembly I doubt very much whether this Assembly to-day would accept my amendment. I doubt indeed whether I should be putting that amendment forward" But, apart from the fact that important economic advantages could be expected in return for the sacrifices involved, the question could not be approached from the purely economic standpoint. It had been recognized from the start as inevitable that the Reforms would involve a change in the fiscal policy of India in the direction desired by the politically-minded classes of the people and the Fiscal Commission were unanimous in advocating a change of policy. Finally, the force of events had led Government to a partial abandonment of their former policy before the Fiscal Commission was appointed. The necessity of raising revenue had led to

large increases in the customs duties so that some industries were already enjoying a fair measure of protection, these increases had not been made uniformly nor had they been made solely with regard to considerations of revenue. To some extent, therefore, the new policy involved the substitution of a tariff scientifically designed to assist industries for one which was arbitrary and irregular in its effects on the industries of India.

(d) Iron and Steel

Following on the passing in the Legislative Assembly of the resolution relating to protection, the Indian Tariff Board was appointed in July 1923. The Fiscal Commission had expressed the opinion that the question of protecting the manufacture of steel should be one of the first subjects of inquiry by the Board and this question was referred to the Board as soon as it was appointed. The reports which the Board presented in the following spring contained a close analysis of the position of the industry, apart from any claim for protection. They found that the industry, apart from any claim that could be based on its importance for purposes of national defence, satisfied the criteria laid down as justifying the grant of protection and that without substantial protection it could not survive. In estimating the degree of protection required, the Board made detailed investigations into the position of the Tata Iron and Steel Company (the only firm which was manufacturing steel on a large scale in India), and analysed the probable cost of producing steel—a question of great intricacy. On the basis of their investigations they drew up a series of proposals for enhanced import duties and bounties on various types of steel products. The Board then went on to consider, with special reference to its previous proposals, the position of various subsidiary industries employing steel products, viz, the engineering industries, the wagon building and the locomotive-building industries, the manufacture of tinplate, wire and wire nails, agricultural implements, steel castings and enamelled ware. In the case of locomotive building, and the manufacture of steel castings and enamelled ware, protection was not recommended, but in all other cases proposals for protection were put forward. The general scheme involved substantial increases in the import duties on iron and steel in various forms and the grant of bounties on steel rails and fish-plates and on railway wagons.

The price to be paid was a heavy one. The Board estimated the burden at approximately a crore and a half annually, over a third of which would be borne directly by the general consumer, the remainder falling in the first instance on the larger industries of the

country and upon Governments, public bodies and the Railways. But the alternative was the extinction of the industry, and all that that involved. To quote from the Board's report—

“ it is worth while to consider briefly what the consequences would be if protection were withheld and the manufacture of steel in India were to cease. A large number of workmen would be thrown out of employment and the industrial training they have gained at Jamshedpur would be to a large extent wasted. A very serious blow would also be inflicted on the coal industry owing to the sudden drop in the demand for coal. These, however, are not the most serious results. The development of India's natural resources for steel manufacture would be postponed indefinitely, for we have no hope that at the present level of prices, fresh capital would be forthcoming or that another firm would enter the business. Finally, and this is the gravest consequence of all, the shock to public confidence in the future of Indian industries would be extreme. It has long been recognised that the progress of industrial development in India will be slow until Indian capital is forthcoming in much more abundant measure than it has been in the past. The complete collapse of the greatest single industrial enterprise in the country would put back the clock for twenty years at least.”*

The issue came before the Legislature for decision at a special session in May 1924 when the Steel Industry (Protection) Bill was introduced by Government in the Legislative Assembly to give effect to the proposals of the Tariff Board. The subsequent discussions both in the Assembly and in the Select Committee were of great interest particularly as they revealed a much greater appreciation of the disadvantages attendant on a protective policy than had been evident so long as India had no choice in the matter. The Assembly generally adhered to the principle of protection and was prepared to grant high protection where as here, a strong case was made out. But the effect of high protective tariffs on the consumer was stressed by a number of members and the case against the whole principle of protection, the cause of nationalization, and the advisability of confining protection to bounties were all presented. It is significant that, although there was a section which considered that the protection offered was tempered unduly by discrimination, the one amend-

*Tariff Board's First Report on the Steel Industry, para 142

ment of substance made in the Bill as presented was made in the interest of consumers the Assembly, in spite of Government opposition, deleted the proposal to enhance the duty on certain classes of agricultural implements The Bill passed into law as Act XIV of 1924 it was to have effect for three years and the last section provided for an inquiry to be made not later than March 1927 into the necessity of continuing protection after that date

The Act had only been in force two months when Government received a fresh application for protection for the steel industry The Tariff Board had pointed out in their first reports the possibility of large changes in the world prices of steel and the necessity of reconsidering the rates of duty if these changes occurred In the months following the passing of the Steel Industry (Protection) Act, the price of continental steel fell so rapidly that the industry soon found itself in much the same position, as regards foreign competition, as it had held before protection was given The Board, on the question of enhancing the duties being referred to them, advised substantial increases in the protective duties the following particulars relating to those classes of unfabricated steel of which the Indian consumption is highest gives some indication of the scale of the enhancement suggested —

	Duty prior to April 1924	Duty ap- proved June 1924	Duty pro- posed in Nov- ember 1924.
	Rs per ton	Rs per ton.	Rs per ton.
Galvanised sheets	30	45	78
Steel bars	14	40	75
Thplate	40	60	104
Black sheets	17 5	30	52

The duties generally represented between 50 and 75 per cent on the value of the articles The Board were precluded by the term of reference from proposing the grant of bounties in place of a higher tariff but on this proposal being made by Government, they concurred in it The existing duties had brought in a substantial increase in revenue and the proposed duties involved placing a burden on the consumer out of all proportion to the benefit to the Indian

manufacture. These considerations were placed before the Legislative Assembly in January 1925, and the Assembly accepted the Government's proposal to leave the duties unaltered, and to give the additional protection by means of bounties on the production of steel ingots manufactured in the year ending in the following September. The total amount so paid was not to exceed Rs 50 lakhs.

In the following months the Tariff Board again examined the question and further proposals were placed before the Legislature in September 1925. These involved the payment of bounties on steel ingots not exceeding Rs 60 lakhs between October 1925 and March 1927. The proposals were adopted, as was also a resolution recommending the modification of the scheme of bounties on railway wagons. In February 1926 the position of the industry again came before the Legislature, when a Bill was introduced for the amendment of the Steel Protection Act. The Bill which passed into law as Act VIII of 1926 secured three objects. It extended the scheme of bounties on wagons to underframes, enlarged the total amount payable under this scheme from Rs 21 lakhs to Rs 33 lakhs, and removed the existing restriction on the amount which might be paid in a single year. In April 1926 the Tariff Board presented a further report on the grant of the protection to the wire and wire nail industry. In this they recommended that the existing protection should not be increased, and their recommendation was accepted.

The effect of these decisions can now be summarized. Substantial duties were imposed on iron and steel, including wire, nails, pipes, plates, sheets and certain railway track material and on steel structures with effect from June 1924. Bounties to the total extent of Rs 110 lakhs were paid on the production of steel ingots between October 1924 and March 1927. Bounties on the production of steel rails and fishplates were paid at diminishing rates for three years from April 1924. Bounties to the extent of Rs 33 lakhs were sanctioned on wagons and underframes for which orders were placed in the same years. The actual disbursements during the years in question amounted to rather less than Rs 20 lakhs, the remaining sums falling to be given later. A point of some interest in this connection is that the bounties on wagons and underframes were not given directly to the manufacturer, but to the purchaser. The railway administration received the bounty, which was calculated at the difference between the price paid to the Indian manufacturer and the price at which the wagon could have been obtained from abroad. In the other cases the bounties went directly to the producers. No exact estimate of the burden involved in the protective duties is possible.

but the following figures show the amounts actually paid by way of bounties up to 31st March 1927 —

Financial year	1924-25	1925-26	1926-27	Total
	Rs	Rs	Rs	Rs
Wagons and underframes	2,85,600	8,45,400	8,46,060	19,77,060
Steel rails and fishplates	32,93,538	33,14,946	29,69,838	95,78,320
Steel ingots	25,00,000	43,60,000	41,50,000	1,10,00,000
Grand Total				2,25,55,380

Some indication of the results of protection became available in 1927 when the results of the inquiry which was required by the Steel Industry (Protection) Act of 1924 were published. This inquiry was made in 1926 and 1927 and the needs of all branches of the industry were reviewed. In respect of rolled and fabricated steel the Tariff Board found that the policy pursued had been successful. The output of finished steel at Jamshedpur, which was about 163,000 tons in 1923-4, was estimated at 380,000 tons in 1926-7 and at an average of 500,000 tons for the following years, reaching 600,000 tons by 1933-4. The costs of manufacture had fallen steadily with the increase of output and were expected to fall further. As regards the effect on the consumer, the Board's general conclusion was, "the decline in steel prices and the expansion of the market indicate that the protective duties has not proved burdensome, that the trade of the country has not suffered, and that no serious hardship has been caused to the producer of steel or to the general public." They recommended the continuance of protective duties but on a greatly reduced scale, and they proposed that the payment of bounties should cease. The new duties, to which the Legislature agreed in March 1927, involved discrimination between British steel and other foreign steel. The discrimination was based not on the desire to introduce the principle of Imperial preference but on the economic needs of the industry in India and the Indian public. The new duties are to expire in 1934 by which time on the Tariff Board's estimate the Indian industry will be able to face British competition (but possibly not Continental competition) on equal terms. In the case of tinplate the results were not quite so satisfactory, but the Board considered

that, "with a reasonable measure of protection, the industry should be established on a firm basis in the near future" and a substantial, but reduced, rate of duty was allowed for seven years

A later report dealt with railway wagons and underframes, component parts thereof, and wire and wire nails. In the case of railway wagons and underframes, the Board found that the industry, under the stimulus of bounties, had made great progress, and was able, in normal circumstances, to meet foreign competition with no assistance other than the existing revenue duty. But owing to the abnormally small estimated demand for the next few years, some assistance was required and the Board recommended that until normal conditions were restored all orders should be placed in India provided a certain limit of price was not exceeded. The result would be a measure of protection by executive order rather than by legislative authority and for this and other reasons, the Government of India dissented from the proposal and put before the legislature a proposal to raise the import duties on wagons and underframes. This was rejected by the Legislative Assembly chiefly on the ground that it involved a measure of protection in excess of the Tariff Board's recommendation, and Government acquiesced in their decision and agreed to adopt the system suggested by the Board. The Board also reported on the question of protection for component parts of wagons, etc., with the result that the duty on bolts and nuts was altered from a 10 per cent *ad valorem* duty to a specific duty of Rs 2 per cwt, thus represented, on the average, a distinct increase in the rates of duty. As regards wire and wire nails the finding of the Board that the protective duty had failed to achieve its object and should be discontinued was accepted by the Government of India and the Central Legislature.

(c) *Miscellaneous industries*

In the meantime a number of claims for protection made by other industries had been considered. The first report presented by the Tariff Board proposed the abolition of the import duty on sulphur, mainly in the interests of the chemical industries. The proposal, which was estimated to involve a loss of rather less than two lakhs annually, was accepted by the Legislative Assembly in June 1924, and sulphur was exempted from the payment of import duty by executive orders. Statutory effect was given to the proposal with the passing of Act XIV of 1925 in the following March.

In 1925 the Tariff Board presented reports on several industries which had applied for protection. The proposals of the Board in respect of the paper industry were of considerable interest as representing the advocacy of protection for the purpose of fostering what

was virtually a new industry. The principal substance used by the Indian mills for the manufacture of paper is *sabai* grass, and the Board found that the making of paper from *sabai* was not an industry which had established a case for protection. On the other hand they considered that the manufacture of paper from bamboo might become a very important industry in India and that assistance should be given to enable the possibilities of the industry to be fully explored. For this purpose they recommended a protective duty on all writing and printing paper except "newsprint" containing a high percentage of mechanical wood pulp. They also advocated the provision of capital to the extent of about ten lakhs by Government to one mill which was using bamboo pulp to enable them to increase their output, and suggested that a similar concession might be justified in the case of another mill. The new capital was to be provided preferably by a guarantee of principal and interest on a public issue of debentures.

These proposals came before the Legislative Assembly in September 1925. Agreeing with the Government of India, the Legislative Assembly decided against the proposal to subsidize individual mills. The proposals involved the grant of assistance to monopolists of patent rights to develop their processes and would have given advantages to the mills in question against other Indian mills competing with them. The proposed increases of duty met with some opposition but they were accepted by the Legislature and were embodied in the Bamboo Paper Industry (Protection) Act*. The result was to give a substantial measure of protection for a period of seven years to the paper making industry in India. The Act benefited not merely present and future users of bamboo-pulp but also those manufacturers who were using *sabai* grass and other materials. Indeed, had the Act not been passed, they would probably have found it difficult to continue in business. But in this case protection was adopted solely to secure the development of the bamboo-paper industry. The Act was one as stated in its preamble "to provide for the fostering and development of the industry of making paper from bamboo". Minor changes in the tariffs which it imposed were made by an amending Act in 1927†.

The Tariff Board also reported in 1925 on the claims of the manufacturers of cement, magnesium chloride and printers' ink for protection. In the first two cases, the industries failed to establish to the satisfaction of the Board a claim for protection and the Govern-

*Act XXV of 1925

† The Bamboo Paper Industry (Protection) Act, 1927

ment of India accepted the views of the Board. In the following year, however, when the price of imported cement showed a tendency to fall, the tariff was altered by the substitution of a specific duty for the *ad valorem* duty then in force. The change was made for the purpose of stabilizing the revenue, but the new duty was based on the findings of the Tariff Board and had the effect at the time of enhancing the duty on the foreign article. In the case of printers' ink the Board found that the industry was suffering from a disability arising from the great disparity between the rate of duty on the foreign article and the rates of duty on the imported constituents used by the Indian manufacturer. The duty on printers' ink was, in accordance with the Board's recommendation, raised from 2½ to 5 per cent. These alterations of the tariff were embodied in Act XVII of 1926.

Allegations that the development of a number of industries was hampered by the difference between the duty on the finished article and the duty on materials which had to be imported for the manufacture of the article were referred to the Board for examination in 1925. One or two of these cases arose out of the protective duties on steel. For example on the application of the manufacturers of wire and wire nails, the protective duty on steel rod and round bar of small diameter was remitted in 1926 and finally removed by Act III of 1927*. The same Act removed the duty on spelter, as the Board found that this duty was hampering the development of certain industries. In the case of certain kinds of belting for machinery, the proposals of the Board, as modified by Government, involved a reduction in the duty of yarn used for the manufacture of belting and the imposition of a duty on imported belting. These changes were embodied in Act VII of 1928.

More important issues were raised by the reference to the Board in September 1925 of the question whether a protective duty should be imposed on imported coal. The two leading associations of coal owners asked for the imposition of a protective duty on all foreign coal, the Indian Mining Association suggested a duty of Rs 1 8 0 a ton on all imported coal and the Indian Mining Federation's proposals included the imposition of a duty of Rs 5 a ton on coal imported from South Africa and of Rs 10 a ton on coal imported from any other country. The Board, whose report was presented in April 1926, expressed the unanimous opinion that a case for a protective duty on all imported coal had not been established. This conclusion was accepted by Government. On the question of imposing a duty

* Another exemption from the protective duties on iron and steel was that given to the importers of parts of inland and harbour steamers in 1926.

on South African coal to counterbalance the effect of a railway freight concession granted in South Africa, the Board was divided, Government accepted the view of the majority that in existing circumstances the imposition of a duty was inadvisable

An application was made in 1927 by a number of companies engaged in the production of petroleum and asking for protection against injury on account of a kerosene price war then in progress. The Tariff Board found that no action was called for, and the rate war ended shortly after the presentation of their report. The case of the match industry which was referred to the Tariff Board in 1926 presented some peculiar features. The industry had grown up under the shelter of a duty substantially enhanced in 1922. Although this duty had been imposed and enhanced for revenue purposes, it represented in 1926 a rate of more than 100 per cent *ad valorem*, and with the establishment of the industry in India, the revenue naturally diminished. The Tariff Board found in favour of the maintenance of the duty as a protective duty, and the change recommended by them was accepted by the Legislature and embodied in Act XVII of 1928.

(f) *Cotton textiles*

The most important fiscal measure taken in the last few years was not the imposition of a fresh duty but the removal of an old one. The cotton excise duty had a long and unhappy history. Its imposition had been based on free trade principles, but the demand for it had come mainly from Lancashire and it had been imposed and maintained in the face of persistent opposition in India. It had not merely furnished a section of publicists with what was to them a convincing proof of their thesis that the economic policy of Government was dictated by regard for British interests, but it had also aroused continuous resentment and suspicion in the minds of the community generally. To quote the Indian Fiscal Commission "the repeal of the cotton excise became an article of political faith among all shades of opinion in India", and the changes made in the tariff in 1917 and 1921, which made the import duties substantially higher than the excise duty, had little effect on the hostility to the latter. With the transfer of the control of fiscal policy to India, its repeal became a question of time*. In 1925 a general strike occurred in the Bombay cotton mills in consequence of a reduction of wages proposed by the millowners, and when it was clear that the reduction would not be made if the duty disappeared, the levy of the duty was suspended by an

* "The history of this question shows that throughout the controversy the Government of India and Indian public opinion have been at one." Fiscal Commission's Report para 95

Ordinance, and the strike came to an end. The duty was finally repealed in March 1926.

The remission of taxation in favour of the millowners throughout the country amounted to about two crores of rupees annually,* but this relief did not bring prosperity to the industry, particularly in Bombay. The Bombay Millowners' Association had already applied for protection and as the Tariff Board was fully occupied with inquiries into steel, a second Tariff Board was appointed to deal with the cotton textile industry. This Board made a large number of recommendations for the reorganization of the industry and they proposed certain alterations in the tariff. They agreed that the existing duties on cotton textile machinery and certain mill stores should be repealed, and this recommendation was accepted by Government. A majority of the Board proposed a 4 per cent increase in the import duty on cotton piece goods and the grant of a bounty on yarn of the higher counts, the President did not support the proposal for a bounty and proposed a differential duty of 4 per cent on all cotton manufactures, including yarn imported from Japan. All the changes were to remain in force for only three or four years.

The Government of India rejected the proposals for the alteration of the duties on cotton piece goods and for the grant of a bounty on yarn. They agreed with the Board in the conclusion that Japan, whose rivalry was to a considerable extent responsible for the depression in the industry, gained an advantage owing to a difference in labour conditions, the main difference was that night work for women was permitted in Japan, and in consequence double shifts were universal in Japanese spinning mills. But the Government of India found that the existing revenue duty on cotton piece goods fully covered the advantage gained by Japan in respect of cloth, and in the case of yarn, an additional duty would have injured the handloom industry.

The Millowners were not satisfied with these findings and they were successful in persuading the Government of India to alter their views. As a result the Indian Tariff (Cotton Yarn) Amendment Bill, which was introduced in the Legislative Assembly in August 1927, proposed to alter the duty on yarn in such a manner as to give some protection to the bulk of the yarn produced in competition with foreign mills. The Bill was passed, although the possible effect on the handloom industry was responsible for considerable opposition.

*In the four preceding revenue years, the tax yielded an average of Rs 1,95,000

The measure* is interesting as being designed to protect an industry from competition arising from less stringent labour laws. It is to be in force up to 31st March 1930 this date being selected on the assumption that owing to a change in the Japanese factory law, by the end of 1929 "all yarn produced during the period that women were allowed to work at night should be off the market"†. In the same session the Indian Tariff (Amendment) Act‡ which *inter alia* repealed the duties on machinery and certain cotton mill stores was passed

*Act XXIII of 1927

†Speech by Sir George Rains in the Legislative Assembly, 18th August 1927

‡Act XXIV of 1927

CHAPTER XIV

Miscellaneous Measures

In respect of the cotton textile industry legislation has not been limited to the measures mentioned in the last chapter. Certain measures of some importance had as their object the advancement of the interests of the cotton industry. The Indian Cotton Committee which presented its report in 1919 called attention to the loss caused both to cotton producers and to cotton spinners and weavers by a number of abuses connected with the organization of the trade. Good cotton was mixed with inferior cotton, and adulteration was practised in a number of ways. The Cotton Transport Act,* which was adopted by the Central legislature in 1923, was designed to make it possible to prevent the import of cotton, cotton waste or cotton seed into protected areas, *i.e.*, areas specified by the local Government with the approval of the local Legislative Council. Prior to the passing of the Act, various forms of cotton were transported from many parts of the country to cotton producing areas to be used for adulterating the better types of cotton grown there. The Act, which was amended in minor particulars by Act XXXIV of 1925, has had very good effects in certain districts. The Cotton Ginning and Pressing Factories Act,† which was passed in 1925, embodied a different method of attack. By enabling the cotton purchaser to trace the origin of his cotton and the gins and presses through which it had passed, it placed the industry in a position to protect itself from the malpractices of those who adulterated cotton in various ways. The measure had the support both of the cotton mill industry and of the agriculturists but naturally it did not commend itself to many of those who came between the cultivator and the manufacturer.

The Indian Tea Cess Act, 1903 (IX of 1903), affords another example of a measure enabling an industry to practice 'self-help'. It was passed in order to provide "a fund to be expended for the promotion of the interests of the tea industry". The Committee appointed under the Act was authorized to expend the money "towards meeting the cost of such measures as the Committee may consider it advisable to take for promoting the sale and increasing the consumption in India and elsewhere of teas produced in India". The funds were provided by means of an export duty not exceeding $\frac{1}{4}$ pie per

*Act III of 1923

†Act XII of 1925

pound of tea In 1920 the Tea Cess Committee represented to Government the desirability of expanding their propaganda work in connection with the consumption of tea in India as well as abroad, and with the approval of those engaged in the industry, the maximum rate of cess was raised to 8 annas per 100 lbs This was effected by means of Act I of 1921 The present rate of cess is six annas per 100 lbs, the cess has in recent years given an annual yield in the neighbourhood of 13 lakhs of rupees, most of which is spent in India and the United States of America

The Bihar and Orissa Mica Bill of 1927 represented an effort to meet difficulties of a peculiar character which had for some time formed a serious hindrance to the development of the mica industry in that province Theft of mica had been for many years prevalent on an extensive and increasing scale, and in 1921-26 the export of mica from India was practically double the recorded output of the quantity of mica mined The Bill proposed to meet the difficulty by providing for the licensing, under suitable restrictions, of all persons engaged in the industry either as miners or as dealers and for the preparation of proper accounts of all mica won, possessed, stored or sold It also sought to prescribe that no mica should be moved from a mine or from the premises of a licensee without a pass or document signed by the licensee or his agent showing the place from which the mica was moved, its quantity and its destination It was hoped by these provisions to prevent as far as possible transactions in mica which had been illicitly taken and to make the movement of stolen mica more easily susceptible of detection The Bill, after being introduced in the Legislative Council, was circulated for opinion and came before the Council again in February 1928, but, although no member spoke in favour of the rejection of the Bill, the motion to refer it to a Select Committee was defeated by 42 votes to 37

More than one official investigation has been directed to problems relating to the coal industry The waste of coal which was known to occur in the main coalfields was responsible for the appointment in 1920 of the Coalfields Committee An investigation previously made by an expert from England had recommended the adoption of a number of methods by which improvements could be effected, and the Committee, which included, in addition to three experts, representatives of the various interests concerned, was appointed to report what action should be taken on the recommendations made In their report,* they found that no improvement in the wasteful methods employed in the coalfields could be expected without State interference,

One member (an official) dissented

and they recommended the establishment of a controlling authority empowered to secure conservation and economic extraction by the regulation of both existing losses and by the control of methods of extraction. Thus the authority would be in a position to prevent individual landowners and coalowners from adopting wasteful methods designed to secure the greatest immediate profit without regard to the future. Sand-sowing* was to be made compulsory within certain limits compensation for the expense involved being repaid from the proceeds or cess on all coal and coke.

These recommendations went far beyond anything previously suggested in India (except as emergency measures) in the direction of the control of an industry or the State but they received the support of the representatives of the coalowners on the Committee, who accepted the dictum that coal was a national asset and that neither landowners nor colliery proprietors should be at liberty to waste this asset without restriction. But they went, as the event showed, further than Government were prepared to go and they failed to secure the general support of the industry. The Government of India and the local Governments chiefly concerned were prepared to accept the most important recommendation relating to the conservation of coal by control over extraction and the Indian Mining Association agreed that it was desirable to legislate to provide for this, although they considered that any restrictions should be limited to those necessary to prevent serious waste likely to shorten materially the life of the country's coal resources and losses by fire. But the Indian Mining Federation were strongly opposed to the scheme of compulsory conservation and in face of great differences of opinion as to the extent of India's coal resources and as to the necessity for the extremely drastic measures advocated by the Committee, Government decided not to proceed with the main proposals.

In the meantime Government had been compelled to impose restrictions on the coal industry of an entirely different character. Prior to 1915 coal had been largely carried between Indian ports by sea routes and one effect of the War was to divert this traffic to the Indian railways. The result of this diversion combined with the rapid expansion in the demand for coal and a reduction in the output of coal which took place in the years immediately following the War, was to impose a very heavy strain on the railways at a time when the War had left them in an unfavourable position. A large proportion of the wagon supply of the country was taken up with the traffic

*— the filling by hydraulic means of the spaces from which coal has been extracted with sand—this enables the remaining coal to be extracted and has other advantages.

in coal and in spite of this, many of the industries in India were finding it impossible to obtain sufficient coal for their requirements. Government therefore decided in July 1920, with the approval of the commercial community, to prohibit the export of coal from India except under license and to withdraw the rebate which had been allowed by the railways on bunker coal for Indian ports. The object of these measures was to increase the supply of coal available for Indian industry both by excluding foreign competitors for that coal and by diverting coal traffic from the railways to the sea routes and so securing more wagons for the supply of coal to inland centres. And the steps taken had the approval of the commercial community. Exports were at first permitted under license on a limited scale, but by the beginning of 1921 it was found necessary to prohibit export entirely with the exception of small supplies for public use in Ceylon, and restrictions were placed on the bunkering of coal at Indian ports. The later restrictions were removed in April 1922 and the prohibition of export was entirely withdrawn in the beginning of 1923.

These measures were, of course, designed to assist industry generally, and they had an adverse effect on the coal trade which lasted after they had ceased to be operative. By 1924 that industry was in a position of considerable difficulty on account of competition with other countries. This competition was not so much within India itself (for imports of foreign coal had fallen to the pre-war level) as in Eastern ports near India such as Colombo, Penang and Singapore. At such ports Indian coal had temporarily disappeared on account of the embargo on exports, and when this embargo had been removed, the trade found it impossible to recapture the market. In these ports there had been considerable dissatisfaction with the quality of the coal imported from India immediately after the War, and having been able to obtain more satisfactory supplies from elsewhere while the embargo was in operation, the importers had no desire to return to Indian coal which was generally dearer and was of variable and frequently unreliable quality.

It was in consequence of this situation that the Indian Coal Committee was appointed in 1924. Its members visited Rangoon, Penang, Singapore and Colombo and after investigations there and in India the report of the Committee was presented in 1925. The Committee had been asked to enquire and report on the measures to be taken to stimulate the export of suitable coal from Calcutta to Indian and foreign ports, and in particular, to ascertain whether effective measures could be taken for the grading of Indian coal for export and for bunkering. Their investigations pointed to the conclusion that the recovery of the export markets depended on the supply of Indian

coal of definite and reliable standards at reasonable prices, and their most important recommendations related to the establishment of a Coal Grading Board for the grading of Indian coal and the granting of certificates which would enable the foreign purchaser to satisfy himself regarding the quality of the coal supplied to him. In order to secure a reduction in the price at which coal could be exported, the Committee recommended an increase of 50 per cent in the rebate of railway freight granted to export coal and the grant of a further rebate in respect of the port charges on coal. The rebates both on the railways and at the ports, were, however to be limited to duly certified coal.

The scheme for a Coal Grading Board was approved by the industry and the Coal Grading Board Act, 1925,* which was passed by the Indian Legislature in September 1925 provided for the establishment of a Board authorized to determine the grades of coals produced by any colliery applying to it and to grant export certificates to any graded colliery. The Act also made it legal to grant rebates of any charges including freights and port dues in respect of certified coal and to give a preference in the supply of wagons for forwarding export coal from a graded colliery. The Board held its first meeting in February 1926 and during the financial year 1926-27 it certified 1,912,000 tons of coal, about 22,000 tons being refused certificates owing to inferior quality and condition. In the financial year 1927-28 the quantity certified was 2,24,000 tons, about 3,000 tons being rejected. These figures indicate that the great bulk of the coal exported from Calcutta not merely to foreign ports but also to Indian ports is certified. From 1st March 1926 the railways concerned enhanced the rebate on certified coal from 25 per cent to 37½ per cent, but they continued to allow the rebate of 25 per cent on coal which had not been certified. And the Port Commissioners of the Port of Calcutta agreed to the reduction of four annas per ton (i.e., 50 per cent in river dues recommended by the Committee.

Another important reduction in railway freights on coal was made at about the same time and was designed to assist not merely the coal industry but the other industries in India and particularly those situated at a distance from the coalfields. In September 1925 the Hon'ble Lala Ramsaran Das moved a resolution in the Council of State recommending concessional rates for railway freight on coal, particularly for distances of 500 miles and over. The motion was opposed by Government on the ground that while they were anxious to reduce freights at the earliest opportunity, the immediate loss of

*Act XXVI of 1925

30 lakhs rupees annually which would be involved in the acceptance of the resolution could not be faced at that time. But the resolution was adopted by the Council. The next Railway budget disclosed a favourable position and with effect from 1st April 1926 Government decided on a reduction in freight on all coal carried more than 400 miles. The reduction was equivalent to a diminution of 10 per cent on the existing rates and was estimated to cost $37\frac{1}{2}$ lakhs of rupees per year. Government took the view that the effect of the reduction would be to cheapen production generally and that, while there might be no immediate stimulation of traffic, the railways would ultimately be benefitted*.

In addition, numerous improvements were made in the methods of transport both on the railways and at the port of Calcutta. In particular, steps were taken to remedy the shortage of wagons which had been a serious handicap to industry in the earlier years of the period under review. The number of wagons was substantially increased, but the lack of adequate transport facilities was not due so much to an actual lack of wagons as to the inability of the railways to cope with the necessary traffic. The most important steps taken were the improvements effected in organization whereby better use could be made of the available wagon supply. The effect of the various reforms introduced was so marked that at the beginning of 1927 the Railway Board was vehemently attacked for having ordered too many wagons, and it was evident that orders for fresh wagons would be small for some time to come.

In consequence, firms which had taken up wagon-building were faced with a serious situation. This was an industry which had been largely stimulated by a guarantee from Government given in 1918 to

*The following figures show the effect on the foreign trade in coal of the various measures taken —

Thousands of tons of coal (including coke)

Year	Exported from India	Imported into India
1924 25	229	493
1925 26	241	402
1926 27	645	155
1927 28	635	274

purchase in India a specified number of wagons subject to certain conditions regarding price and quality. This undertaking was withdrawn in 1924 when the industry received protection, but the industry naturally remained dependent on official support, and Government entered into negotiations with a view to taking over the establishments affected. Of the two companies which were exclusively engaged in manufacturing wagons and which had been formed as a result of Government guarantee, one was taken over by the Railway Board.

A large number of important changes have been introduced in connection with the organization of Indian railways since the receipt of the report of the Indian Railway Committee in 1921. Most of these lie outside the scope of this survey, although some of them are indirectly of importance to industry and the steady transfer of the management of Indian railway systems from Companies to the State has been a feature of the period under review. Mention may, however, be made of one measure recommended by that Committee which was directly related to the demands of Indian industrialists. There had been frequent complaints on the part of industrialists against various railway rates for freight and allegations had been made from time to time undue preference was shown to particular interests, or that rates and conditions of freight were in themselves unreasonable. In 1926 the Government of India decided to appoint a Railway Rates Advisory Committee which was empowered to investigate and make recommendations regarding various complaints relating to railway rates and other matters relating to freights. The Committee was composed of a former member of the Governor-General's Executive Council as President, a Railway Member and a third member appointed *ad hoc* from time to time to represent the commercial interests concerned. The Committee has investigated several complaints referred to it, but the number of cases requiring its attention has been by no means so numerous as might have been expected from the amount of criticism formerly directed against railway rates.

Before leaving the discussion of the efforts directed towards the stimulation of industrial activity in India, mention should be made of an important issue which arises out of the results of these efforts. Industrial enterprise in India has been to a considerable extent dependent on the supply of capital from abroad, and those responsible for providing the capital have naturally secured a large measure of control. But the demand for industrialization, as has already been indicated, has been closely associated with nationalist aspirations, and as industry developed, apprehension was felt in many quarters that one result of fostering industries might be increase the power of

Indian capitalists. The ideal was an Indian industrialism, not industrialism in India carried on and controlled by non-Indians.

This ideal was recognized in official policy before the adoption of protection, as Mr (now Sir) Atul Chatterjee on behalf of Government observed in the Legislative Assembly *

“ The settled policy of the Government of India, as I think we have mentioned more than once in this Assembly, is that no concession should be given to any firms in regard to industries in India, unless such firms have a rupee capital, unless such firms have a proportion, at any rate, of Indian directors, and unless such firms allow facilities for Indian apprentices to be trained in their works. This has been mentioned more than once, and I can only repeat this declaration ”

But with the adoption of protection the apprehension regarding the results of the continuous inflow of foreign capital was naturally strengthened. Protection in every country has derived its strongest support from the instinct of nationalism, and a tariff policy whose main result was the development of industry by non-nationals would be regarded by many protectionists as worse than useless. The question was discussed at some length by the Indian Fiscal Commission. While the majority wished to apply the conditions mentioned in the quotation above in all cases where Government granted a concession or any subsidy or bounty, the minority wished to apply the conditions in all cases where protection was granted. In the case of the grant of protection by means of bounties, there was no difficulty in applying the conditions and they were embodied in Act XIV of 1924 which provided, *inter alia*, for the grant of bounties to the steel industry. But where protection took the form of an increased tariff, the imposition of conditions such as those mentioned was obviously difficult and the minority report did not indicate precisely how the difficulty was to be overcome.

The general question was clearly one of importance and in 1924 Government appointed the External Capital Committee which was presided over by the Finance Member of the Governor-General's Council and was composed of members of the Central Legislature. The terms of reference were “ to consider the question of the flow of capital into India from external sources ”, and the Committee, after holding a number of meetings presented its report in 1925. Their general conclusion was that the inflow of external capital was a valuable factor in assisting the economic development of India and

that general measures discriminating against it or penalizing it in any way of taxation or control would be definitely injurious both to the development of Indian resources and to the interests of the Indian investor. But they emphasized the importance of stimulating the flow of capital from internal sources and recommended that in the case of loans preference should be granted to the Indian investor. They also recommended that, where investment carried with it the control of an undertaking, the conditions to which reference has already been made should be applied provided that discrimination was feasible. But they considered that where a general concession was given, e.g., by means of a tariff, it was impracticable to effect any discrimination. After referring to numerous suggestions designed to prevent the foreign investor from securing an undue benefit or an undue measure of control, they observed —

“ All these nebulous suggestions for penal taxation or licenses suffer from the same defect. As the entry of external capital into India is at present determined by free market conditions, there is not, as is crudely supposed by some, a definite amount of external capital which must find investment in India, whatever the return India may choose to give it. The world supply of capital has been materially diminished by the war, and the demand for it is keen. There is also evidence that in recent years there has been a definite tendency for external capital to become increasingly shy of seeking outlets in India. Discriminatory taxation would have a far wider influence in restricting the flow of future capital into India than its mere pecuniary effects. There would be the fear of future developments on the same lines, and as the largest amount of external capital which comes into India at present is probably the reinvestment of past profits and the replacement of the depreciation of previously invested capital the former would be removed and the latter neglected for a higher immediate return. Nothing could be more disastrous to the industrial development of India than measures which would scare away the external capital invested in it or prevent the local investment of its profits ”

CHAPTER XV

Labour Questions

(a) *Introductory*

The doctrines of *laissez faire* which until the War had influenced powerfully the attitude of Government in respect of assistance to industry exercised scarcely less influence over Government policy in respect of the protection of labour. And the industrialists who led the demand for a change of attitude towards industry were naturally less ready to criticize the accepted policy when it was applied to labour. They were indeed quite prepared on occasions to base their opposition to "interference" with their employees on the very principles to whose application in another direction they were so strongly opposed. Labour was equally unrepresented in official councils and non official congress and prior to the War there was no substantial section of articulate public opinion which was prepared to attack on behalf of labour the accepted view. And on the rare occasions when labour measures were put forward the official proposals usually evoked vehement opposition from industrialists and little support from any other section of the community.

It is not surprising therefore that Government seldom felt called upon to take action in respect of labour. The first attempts to "regulate" labour consisted of enactments such as the earlier Assam Labour Acts, the Workmen's Breach of Contract Act of 1859 and the Employers and Workmen's (Disputes) Act of 1860. At this stage the main anxiety of Government seems to have been to protect the social system from the workmen, rather than to protect workmen from the social system. All these rendered workmen liable to criminal penalties for breach of contract and the Indian Penal Code of 1860 also contained provisions of this character. At a later date, the obvious abuses connected with child labour in factories were mainly responsible for the passing of Factories Acts in 1881 and 1891, the latter Act also embodied the principle of the prohibition of night work for women and limited their daily hours. The first Mines Act was passed in 1901 but it did not attempt to regulate hours and it was not until 1924 that any restriction was placed on the age at which children might be employed, or on the hours for which they might be worked. The introduction of electric light in factories combined with an increasing shortage of labour led to a

steady increase in working hours until by 1905, when public attention was first directed to the question (mainly by the efforts of the *Times of India*), the majority of the operatives in the Bombay cotton mills were worked for 14½ hours a day and in most of the textile mills throughout the country hours ranged between 13½ and 15 hours. But it was not until 1911, after investigations by two Commissions, that a new Factories Act was passed into law. The most keenly contested provision of this Act was a clause limiting the hours of adult workmen in textile mills to 12 daily.

At this stage labour legislation virtually remained until the reforms, except for small changes in the law relating to breaches of contract by workmen. The provisions for criminal punishment of breaches of contract under the Assam Labour and Emigration Act were finally withdrawn by notification in 1915* when the Act was amended in minor respects, but the Workmen's Breach of Contract Act remained in force in Assam and elsewhere. Government agreed in 1920 to modify this Act in some respects in favour of the workman, but they were not prepared to accept the views of the small but growing section which demanded its repeal.

Apart from these infrequent legislative efforts, labour received little attention from the State. Staffs were maintained for the inspection necessitated by the Factories Act and the Mines Act, but there were no Government departments or offices dealing with labour questions generally, and such questions seldom came into prominence either in the legislatures or elsewhere. The complaints of employers regarding shortage of labour were responsible for an official enquiry into the subject in Cawnpore in 1905, but employers did not as a rule desire any official action in respect of labour, labour itself was inarticulate and the general public took little interest in the subject.

But the years immediately following the end of the war saw a great change. Prices had risen substantially and continued to rise and as wages generally rose more slowly, the worker found that his real income had diminished. On the other hand, employers in the leading industries were receiving phenomenal profits. At the same time the expansion of industry resulting from the war had increased the demand for labour. Finally, the ferment of the war had awakened labour in the cities from its accustomed passivity, and it showed a readiness to organize that was previously lacking. All the conditions, therefore, were favourable for a demand for higher wages and better conditions. A few strikes were quickly successful and the strike leapt into recognition as a powerful weapon, indeed, to many workmen its rapid and almost unvarying success made it seem almost

*From four districts in 1908 and from the remainder in 1915

infallible The result was an epidemic of industrial strife which first became marked in the winter of 1919-20 and reached a climax in the following winter. And the new attitude of labour was both reflected in and stimulated by the beginnings of a regular trade union movement in 1920 ; prior to that date organization had been practically unknown except among the small section of literate employees While the majority of the strikes were designed to secure increased wages to compensate for the great rise in prices which had taken place there was also a general demand for better conditions of work. For example, in several important centres the strikers had demanded and had succeeded in securing a sixty-hours week Some of the more influential employers were strong advocates of further regulation ; while there was an increasing general recognition of the fact that satisfactory labour conditions were a stimulus and not a handicap to industrial progress The presentation in March 1920 of a memorial to the Viceroy by the Bombay Millowners asking for the statutory reduction of hours from 12 to 10 in the mills throughout India was symptomatic of the new outlook.

(b) *Labour and the Reforms*

The altered situation was reflected in the constitutional changes, in the organization of Government and in the attitude of the legislatures, and particularly the Central legislature. Questions affecting labour received little attention in the Montagu-Chelmsford Report, and in the illustrated list of subjects appended to the Report all the labour subjects were shown as provincial reserved subjects Even inter-provincial migration was so shown although in this case it was expressly indicated that it was to be administered subject to the control of the Government of India. But the authors of the report indicated the probability of an expansion of the relations of the State and labour, for they included in their list of subjects several subjects hitherto unknown to Indian administration such as accident insurance, industrial health insurance and labour exchanges. The Functions Committee varied these suggestions considerably In the first place, they transferred inter-provincial migration and the regulation of mines to the list of all-India subjects, observing as regards the latter subject that it would be impossible without great extravagance and loss of efficiency for each province to have its own expert staff And while they included other labour matters under the provincial reserved head, they provided that factories the settlement of labour disputes and boilers would be subject to all-India legislation This proviso was not applied to a division of the subject, which though new to India, was equally important, viz. ' welfare of labour (including provident

funds, industrial insurance, general health and accident) and housing "

The Government of India at first suggested no modification in these proposals, and when the lists of subjects were revised by a Reforms Committee in the India Office for submission to the Joint Select Committee on the Government of India Bill, the subjects in question appeared unaltered. But when the Government of India forwarded for the Secretary of State's sanction about a year later the draft rules for the classification of subjects, they proposed to make "the welfare of labour", with all that had been included under that head, subject to all-India legislation and this proposal was accepted and embodied in the final rules. The decision was one of some importance as it would have been impossible, if the proposals of the Functions Committee had been accepted, for the Central Legislature to legislate on such subjects as Workmen's Compensation and Trade Unions.

The Reforms provided for the first time for some representation of labour in the legislatures. The Franchise Committee had suggested the filling of single seats by nominated labour representatives in four Legislative Councils. Following a suggestion made by the Joint Select Committee on the Government of India Bill, the Government of India gave further examination to the question of securing better representation to the urban wage-earning class, and proposed the creation of a special constituency of factory workers in Calcutta, while in Bombay workers in textile factories were to be specially enfranchised and included in city constituencies. These proposals were rejected by the Joint Select Committee on the Draft Rules made under the Government of India Act in favour of a system of nomination. Two seats were allotted to nominated labour representatives in the Bengal Legislative Council and one seat in each of the Councils of Bombay, Bihar and Orissa and Assam. With the introduction of the reforms into Burma, a nominated seat was assigned to labour in that province. No seats were specifically allotted to labour representatives in the Central legislature, but a labour representative has occupied a nominated seat in the Legislative Assembly throughout its existence.

Following the discussion of the Reforms Enquiry Committee's Report, further representation was given to labour by nomination in 1926. Two additional seats were allotted to labour in the Bombay Legislative Council and single seats were given in the Punjab and Central Provinces Councils, bringing the total number of provincial

seats up to 10 Since then the Madras and the United Provinces Councils have been the only ones without labour representation.*

(c) *The International Labour Organization*

The decision to make subjects concerning the welfare of labour subject to central legislation was influenced by the emergence of a new factor in the situation. Forty years before, when the first Factories Act was under consideration, one of the questions at issue was whether that legislation should be applicable to all India or only to particular provinces, and the decision to make legislation uniform was based on the view that it would be unfair to subject industrialists in one province to restrictions which were not applicable to their rivals in another, and that if it were left to the provinces to legislate a simultaneous advance would be very difficult to secure. With the economic unification of the world which resulted from the improvement of communications and the organization of markets, similar considerations became applicable in the international sphere and at the close of the war, it was widely held that if the conditions of labour throughout the world were to be substantially improved, some organization was necessary in order to secure a simultaneous international advance. The recognition of this view found expression in the Treaty of Versailles which involved the acceptance by its signatories of a new standard of policy in respect of labour matters and which by setting up the International Labour Organization, provided an important influence for the working out of that policy. The first International Labour Conference met at Washington in the autumn of 1919 and it was evident that the deliberations, to which representatives from India had made an influential contribution, would necessitate a fairly wide review of the position in India in respect of labour legislation. The International Labour Conference cannot compel countries to accept its conclusions but its procedure and the fact that its Conventions and Recommendations have ordinarily to be submitted to the legislature in each country ensures the regular examination, both by the executive Government and by popular representatives, of numerous schemes for the amelioration of labour conditions. Ten sessions of International Labour Conferences were held between 1919 and 1927 and the submission at intervals of conclusions reached by the Conference to the Legislative Assembly and the Council of State has been instrumental in stimulating public interest in labour questions and at times in initiating measures which might not otherwise have been adopted.

*In both these Councils the depressed classes are represented, in Madras in particular, they have been allotted ten seats.

Almost immediately after its inauguration, the reformed Central Legislature was called upon to consider the conclusions reached at the Washington Conference. In February 1921 a series of Government resolutions was introduced in the Legislative Assembly urging the acceptance of most of the important proposals made at Washington. These included the imposition of a weekly limit of 60 hours on the employment of industrial labour, the prohibition of night work by women and young persons in factories, and the raising of the minimum age* for industrial employment to 12. The debates on the resolutions relating to these and the other proposals were significant. Nearly all the proposals were carried without a dissentient voice and the only question which aroused a controversy was the proposal to raise the minimum age of employment to 12. Here all were agreed that an advance was necessary, but a substantial section of the Assembly desired to fix the age at 11 and was defeated by a small majority. In the Council of State the debates gave the same results. The course of these and subsequent debates made it clear that the reforms had brought to the Legislature for the first time a substantial section of non-officials who were in favour of further protection for labour and who were anxious to voice the growing interest of public opinion in questions of social welfare.

Numerous other subjects have been raised by debates on Draft Conventions and Recommendations adopted by subsequent sessions of the International Labour Conference. The Conventions so far ratified are the following:—

Convention limiting the hours of work in industrial undertakings

Convention concerning unemployment

Convention concerning employment of women during the night

Convention concerning the night work of young persons employed in industry

Convention concerning the rights of association and combination of agricultural workers

Convention concerning the application of the weekly rest in industrial undertakings.

Convention fixing the minimum age for the admission of young persons to employment as trimmers and stokers

Convention concerning the compulsory medical examination of children and young persons employed at sea

*The age in factories had remained at 9 since 1891. In mines and other branches of industrial employment no age limit was in force

Convention concerning workmen's compensation for occupational diseases

Convention concerning equality of treatment for national and foreign workers as regards workmen's compensation for accidents

Convention concerning the simplification of the inspection of emigrants on board ship

In some other cases, where Conventions have not been ratified, action has been taken on them. Thus the Convention fixing the minimum age for admission of children to employment was not ratified owing to the impossibility of ratifying these Conventions with even a minor reservation, but the main principle of the Convention was adopted and applied by legislation to factories, mines and ports. And the consideration by the Legislature of the Draft Convention for establishing facilities for finding employment for seamen led to the appointment of a Seamen's Recruitment Committee which investigated the conditions under which seamen were recruited at Calcutta and Bombay. The inquiry revealed the existence of serious abuses at Calcutta and was followed by administrative changes which have produced satisfactory results.

(d) Intelligence and investigations

The increased prominence of labour questions was recognized by the appointment by the local Governments in 1920 of a Commissioner of Labour with a small office in Madras and a Labour Intelligence Officer in Bengal. In the same year a Labour Bureau was established by the Government of India. These offices dealt for the most part with questions affecting labour which demanded the attention of their Governments, and they were not equipped for systematic investigations of any size. A Board of Economic Inquiry, consisting of officials and non-officials, was set up by the Punjab Government in the same year, but its published investigations have not included any inquiries of importance relating to industrial labour. In 1921, the Bombay Government set up a Labour Office, which was equipped for extensive inquiries and this office has to its credit most of the statistical research into labour conditions done since that date.

But an endeavour was made by the Government of India to stimulate the collection of systematic information relating to industrial labour throughout India. In respect of factories and mines, detailed statistical material had been published annually for a number of years, and from the beginning of 1921 arrangements

were made for the collection of particulars regarding strikes and lock-outs throughout India. The results have been published quarterly since then. At the same time, the Government of India took up the questions of constructing cost-of-living index numbers for the working classes and of conducting a census of industrial wages. After a Conference attended by several experts at the beginning of 1921 they addressed local Governments on the subject of index-numbers. At this time they had the hope of constructing an all-India figure, they proposed the collection of family budgets throughout India and, as the existing statistics of prices were not sufficiently reliable, they suggested the appointment of a special staff for the collection of prices in each province. They recognized the possibility of constructing index numbers by the aggregate expenditure method*, but cast doubts on the appropriateness of this method as applied to India, and suggested that, while it might be used in the first instance, the results should be checked by a collection of family budgets.

The proposals met with a varying response. The majority of local Governments were willing to co-operate, but this majority did not include the most important industrial province, Bengal, where financial stringency was already making itself felt. And the investigations made led the Government of India to the conclusion that the construction of an all-India index figure should not be undertaken. In Bombay the Labour Office established in April 1921 published at once an index-number based on the aggregate expenditure method, and although at a later date family budgets were collected in Bombay and an index-number was constructed on the basis of these, the figure published by the local Government is still framed on the method originally adopted. In the United Provinces, a number of budgets were collected at Cawnpore but the results did not appear to the local Government to form an adequate foundation for the maintenance of a regular index number. Index numbers were framed and have been regularly published for six centres in Bihar and Orissa. More recently the Government of the Central Provinces has conducted the investigations necessary for the maintenance of figures for Nagpur and Jubbulpur, while the Bombay Labour Office has published the results of the collection of a number of working-class budgets in Sholapur. The most extensive investigation into the cost of living of the working classes is that made in

*In this method the "weights", i.e., figures denoting the relative consumption of various articles, are constructed not from an examination of actual family budgets, but from statistics of imports, production and exports in the area concerned—in this case India as a whole.

Rangoon by the Labour Statistics Bureau which was established by the Government of Burma in 1926. The inquiry was conducted into the standard and cost of living of the working classes in Rangoon, and the report which was published in 1928 was based on the collection of over 4,000 family budgets. The cost of living was analysed in detail for Burmese, Madras and Uruva Hindustani and Chittagonian employees, separate index-numbers have been worked out for each class.

The scheme for a census of industrial wages was never carried through. Proposals were formulated in March 1921 at a conference attended by ten non-official members of the Central Legislature including several prominent industrialists and a number of forms were prepared and distributed while the Government of India made arrangements for the employment of a special staff for the compilation of the returns. But except in Bombay, nothing was accomplished. The need for retrenchment in both the Central and Provincial Governments prevented the initiation of the census on a scale sufficiently adequate to produce reliable results. Efforts were made in a few provinces to collect returns but the absence of an expert and interested staff and of any statutory powers made the results negligible. In the Central Government the need for economy led to the abandonment of the arrangements for the appointment of the special compiling staff, and this was followed in March 1923 by the abolition, on the recommendation of the Indian Retrenchment Committee of the Labour Bureau in the Government of India. It had been intended to act as a bureau for the collection of information but the needs of the period resulted in its attention being devoted mainly to labour legislation; its existence coincided with a period of phenomenal activity in this direction.

In the Bombay Presidency alone some results were achieved. Here the Labour Office, with the co-operation of the cotton millowners, carried through a census of wages for the cotton textile industry in 1921, a second census was taken in 1923. Another inquiry into wages conducted by the same office related to agricultural labour in the Bombay Presidency. The Bombay Labour Office has also conducted a number of investigations in other directions including the compilation of information relating to the deductions made from wages by way of fines. And this office, among its other activities, has been responsible for the publication monthly since 1921 of the *Labour Gazette* which has supplied information on questions concerning labour in the Bombay Presidency and India generally to a wide public.

One inquiry of some importance relating to the cotton textile industry was instituted by the Central Government in 1921. The ques-

tion of ventilation and humidification in cotton mills had been a perplexing problem for many years. The requirements of the industry necessitate in most centres the artificial maintenance of a humid atmosphere for a large part of the year and it had proved impossible in such circumstances to devise standards of ventilation satisfactory both for the operatives and the working processes. The investigation which was conducted by Mr T. Maloney, an expert brought from England, had as its objects—

- (1) to obtain accurate observations regarding the method of humidification and ventilation employed in cotton mills and their effect on working conditions, and
- (2) to evolve recommendations designed to effect a marked amelioration in conditions without detriment to that industry.

The results of the detailed inquiries conducted in all the important centres of the industry were published in 1923, their technical character makes it impossible to summarise them in a sentence or two, but it may be stated that they involved the adoption of standards of an entirely new character and offered the promise of a definite solution of the difficulties. They have been followed by further investigations conducted by Provincial Governments and directed towards the devising of satisfactory rules under the Factories Act, and in some provinces rules regulating humidification have since been promulgated.

Another inquiry during the same period undertaken in consequence of a resolution adopted by the Washington Labour Conference related to the possibility of introducing a scheme for compulsory maternity benefits, but the results indicated that the adoption of 'any comprehensive scheme was impracticable, and a report was submitted to the International Labour Conference of 1923. In 1924 an official investigation was made by two medical women into conditions of women's labour in Bombay City and the leading industries of Bengal, the results of the latter inquiry were published in one of the *Bulletins of Indian Industries and Labour*. Other bulletins in this series have dealt with such subjects as factory legislation, the exclusion of women from mines, the provision of maternity benefits by employers in India and periods of wage-payment, and have made available to the public accounts, with special reference to India, of International Labour Conferences, and the decisions of these Conferences.

(c) *Housing*

The subject of "housing" was included in the labour sub-

Rules. But except in Bombay, the activity of Government in respect of the provision of housing for industrial workers has been practically confined to the provision of houses for a number of their own employees. In some cases Improvement Trusts have been instrumental in providing housing accommodation, but their activity has not been directed particularly towards industrial labour. In Bombay, the housing of labour had for long been a grave problem and after the War the conditions became even worse than they had been previously. This led the Bombay Government to undertake an industrial housing scheme which was organized along with other schemes for the development of the City of Bombay. The scheme was based on an estimate of the actual shortage of accommodation framed in 1919 and the original programme provided for the construction of tenements containing 50,000 single rooms. But the scheme has not been carried out on this scale as owing partly to the subsequent depression of trade in Bombay City the demand for tenements proved much less than was anticipated. Actually the number of rooms provided up to the end of 1927 was about 16,500. These were built in tenements of 80 rooms each situated on healthy sites and were well provided with open spaces.

The rent of the rooms necessary to provide for their maintenance and give an adequate return on the capital invested has been estimated at about Rs. 16 each per month, a figure far beyond the sum which the average working man in Bombay is capable of paying. In practice the rooms have been offered at figures representing on an average, less than half that sum, but even the reduced rents are considerably in excess of the amount which the mill operative is prepared to pay. In Worli in particular, where more than half the new tenements are situated, nearly two thirds of the tenements had not been brought into use in 1927 although the rents had been fixed as low as Rs. 5 per room.

Large employers of labour and private individuals acting on behalf of any community or section of the public have been given the opportunity of leasing whole tenements at concession rates representing about 80 per cent. of the total rentals demanded from individual tenants for the same accommodation and by 1927 five tenements had been taken up on these terms by the B. B. and C. I. Railway. Others have been utilized by Government and the Municipality of Bombay, but the total number of occupants who can be regarded as industrial workers is a comparatively small fraction of the industrial population of Bombay.

(f) Industrial disputes

The prevalence of industrial unrest in 1920 naturally led to the exploration of methods for the settlement of disputes. The Madras

the next chapter but by the end of 1928 no legislation on the subject was in force

But this has not prevented local Governments or their officers from participating in the settlement of trade disputes on a number of occasions. Following the report of the Bengal Committee, a panel was appointed in Bengal, and on one occasion the appointment of a conciliation board led to the end of a strike on a light railway. Committees of enquiry were appointed by the local Government for two other disputes in 1921. In 1923 the District Judge of Ahmedabad arbitrated in a dispute affecting the cotton mills of that city, which arose out of the interpretation of a previous non-official award, his award being accepted, and in 1925 an award of the Collector of Combaratore relating to a wage reduction was accepted by the parties to a dispute in a local mill. In 1926 the Commissioner of Labour, Madras arbitrated in a dispute between the employees in a railway workshop and the railway administration. In two strikes affecting all the Cotton Mills in Bombay City, the local Government appointed committees of three members. In 1924 a committee over which the Chief Justice of the Bombay High Court presided, gave findings on certain questions of facts referred to it, and its findings were largely instrumental in bringing to a close a strike which lasted for about three months. And in 1928 a strike in the same mills which lasted from April to October was ended by the appointment of a committee, with a High Court Judge as Chairman to report on the demands of the parties. In a considerable number of other cases, various officers have played an active part in securing the settlement of disputes by advising the parties and bringing them together or suggesting terms of settlement.

used. The Bill provided for the inclusion of all factories employing not less than 20 persons and using mechanical power. Local Governments were to be empowered to bring within the scope of the Act by notification factories employing not less than 10 persons, whether they employed mechanical power or not.

The Bill went through a Joint Select Committee of both Chambers which made few changes of importance, the chief alteration was the reduction of the daily limit of hours for men from 12 to 11. It was passed in January 1922, and, as Act II of 1922, came into force in the following July. A few further amendments of a minor character were embodied in another Factories Amendment Act* passed in the following year.

A third Act† amending the Factories Act was passed by the Indian Legislature in 1926. This Act was of a somewhat different character from the 1922 Act. The 1922 Act represented a comprehensive reform of the main features of Indian factory legislation, the 1926 Act affected none of the principles adopted in 1922, but it introduced a number of changes of detail designed to secure the smoother and more efficient administration of the Act. It was based almost entirely on proposals framed at a Conference of Chief Inspectors of Factories convened by the Government of India in 1924 which brought to light a number of possible improvements in the law. Amendments were made in many sections, the more important of these were the provisions introducing a new section providing for the punishment of parents and guardians who allowed children to be employed in two mills on the same day, the changes made in the law in respect of rest-intervals and the alterations effected in the sections governing the grant of exemptions. A proposal designed to prevent excessive temperatures in factories was deleted by a majority in Select Committee.

The Acts have been supplemented by new sets of factories rules in all provinces, and by a number of notifications granting exemptions in cases satisfying the conditions prescribed by the law. The effect of the Acts of 1922, 1923 and 1926, and of the orders issued thereunder has been that little but the shell of the Act of 1911 remains, the Reforms have seen the introduction of a new and radically different factory code. At the same time the number of factories subject to the Act has greatly increased. In 1920, the number was 3,804, by 1927 it had risen to 7,515. A considerable part of this increase is due to the inclusion of the smaller factories which

*Act IX of 1923

†Act XXVI of 1926

were not subject to the earlier Act, but much of it is due to the steady advance of industry. In no year since 1892 (when accurate records were first kept) has the number of operatives employed failed to show an increase, and in only one year did the number of registered factories decline. Along with this there has been a steady increase in the complexity of the processes involved.

The result of all these changes has been to add greatly to the task of administering the Act. The standard of administration has always varied from province to province, as early as 1907, these variations attracted attention and the Indian Factory Commission framed proposals designed to secure greater uniformity. But these were not accepted and with the introduction of the reforms and the greater independence enjoyed by local Governments, the standards of administration have, if anything, shown wider variations than before. In some provinces prosecutions for infringements of the Act have been infrequent, in one province at the introduction of the reforms, a policy of avoiding prosecutions was deliberately adopted. The local Government commenting on the annual factories report observed —

“ A novel feature of the report is the entire absence of prosecutions. Owners were given a reasonable time to make up deficiencies revealed by inspections, and this course has proved satisfactory in every case. The absence of friction is one of the most important objects to be attained in the Administration of the Act, and the Governor in Council hopes that it will be possible to continue the present policy ”

But these hopes were not fulfilled and there was a prompt return in this case to more orthodox methods of administration. On the other hand, in the more important industrial provinces the administration of the Act has received a large amount of attention and, although the staff has not everywhere been adequate, the standards of administration generally have been more than maintained. The staff employed wholly or mainly on the inspection of factories has been practically doubled in strength between 1921 and 1928.

(b) *Mines*

The passing of the Factories Act of 1922 was followed in September 1922 by the introduction of the new Mines Bill. The existing Mines Act dated from 1901 and it was in many respects obsolete. It contained a number of provisions designed to secure safety in mines and it provided for the maintenance of an inspecting staff, but it contained no provisions regulating the employment of labour. A

clause enabling Government to prohibit or restrict the employment of women or children either below ground or on hazardous kinds of labour had not been utilized, and labour in the mines was subject to no restrictions in respect of hours, holidays, etc., other than those imposed by the owners' discretion and the miners' dislike of continuous toil. Further, the Act gave collateral authority in most respects to the Government of India and to local Governments and the new constitution, which made the subject central, would have necessitated its revision even if stronger reasons had not rendered this an urgent matter.

The new Bill, in addition to containing revised provisions relating to those matters which came within the scope of the old Act, contained a chapter relating to hours of employment. This provided for a weekly holiday, for the limitation of hours of adults above ground to 60 weekly and below ground to 54 and for the complete prohibition of the employment whether below or above ground of persons under 13 years of age. The Bill also provided for the demarcation of functions between the Central and Provincial Governments, the power to make regulations for more important matters was generally reserved to the Government of India but it was proposed to give to local Governments the power to prohibit or restrict the employment of women either above or below ground or on particular kinds of labour.

The Bill, after being circulated for opinions, was considered by a Joint Select Committee of both Chambers at the beginning of 1923. The most important question which came before them was that of the exclusion of women from mines. Government had for over 20 years possessed the power to prohibit the employment of women underground, but the extent to which coal mining in particular depended on women's labour had stood in the way of action and the development of the industry which had steadily added to the female labour force had steadily increased the difficulties in the way. The Committee observed that immediate exclusion was impracticable and that employers must be given time to make the adjustments which the exclusion of women would involve. They amended the Bill so as to provide that the power to exclude women should rest with the Government of India and not with local Governments, and added

"We desire however to place on record a recommendation that the question of the employment of women below ground in mines should be taken up at a very early date with local Governments with a view to prohibiting such employment either in all mines or in particular classes

THE STATE AND INDUSTRY

of mines at the end of a specified period, which we think should be about five years "

The Bill was passed by the Legislative Assembly in January 1923 and by the Council of State in the following month without further amendments. A considerable amount of discussion took place in the Assembly over a proposal to impose a daily limit on hours of work. Labour in the coalfields has always been extremely irregular in its attendance and many of the miners were in the habit of working only a few days in the week and of spending long continuous periods underground. The Coalfields Committee had investigated the possibility of introducing a compulsory shift system which would have operated as an automatic restriction on the daily hours of work, but they came to the conclusion that the enforcement of such a system in existing conditions would be premature. The Assembly rejected the proposal for a daily limit after Government had indicated that they would make a reference to local Governments regarding the possibility of introducing a statutory system of shifts. The Bill was passed into law as Act IV of 1923 and came into force from July of the following year. The Act was supplemented by a long series of revised regulations promulgated in 1926.

After the Bill was passed, the Government of India consulted local Governments on the two important questions which had been raised in connection with it, *viz*, the exclusion of women from mines and the introduction of a statutory system of shifts. In connection with the former question, they put forward for consideration the proposal that prohibition might take effect at a specified date, *e.g.*, five years after the coming into force of the new Act, and they suggested that prohibition should be limited to work underground. As regards the shift system, they suggested that, to begin with, the day might be divided into two shifts of 12 hours each, and added that the Government of India were inclined to the view that, as the labourers become used to the stricter regulation of hours which a shift system postulates, the time would come when a shorter working day with definite rest intervals would have to be imposed.

In respect of the exclusion of women from mines, the replies received were discouraging. Support was forthcoming for the proposal from those provinces in which, owing to the paucity of mines or the small proportion of women employed, the effects were not likely to be serious, but in the main coal areas, where the bulk of the women were employed, there was vigorous opposition and the three Governments chiefly concerned (Bengal, Bihar and Orissa and the Central Provinces) were agreed that it was premature to take any positive steps towards exclusion. There was, it is true, fairly general re-

recognition of the desirability and, indeed, inevitability of the exclusion of women at some future date, but there was strong opposition to the fixing of a date and an almost entire absence of constructive proposals.

The question was re-examined by the Government of India in consultation with the Standing Advisory Committee of the Indian Legislature attached to the Department of Industries and Labour in 1925 and 1926. The general conclusion reached was that it was impracticable in the main coalfields to attempt the wholesale exclusion of women on any specified date and that the adoption of gradual methods was essential. Accordingly in 1927 the Government of India put before the Mining Boards and the Provincial Governments mainly concerned fresh proposals involving the exclusion of women from coal mines in Bengal, Bihar and Orissa and the Central Provinces by prescribing that the number of women employed underground in any mine should be a gradually diminishing percentage of the number employed in 1926 women being finally excluded altogether by the middle of 1935. In other mines, women were to be prohibited from working underground as soon as the regulations came into force.

After receiving the opinions of the local Governments and Associations most directly concerned on these proposals the Government of India finally published for criticism a revised series of regulations in June 1928. These followed, in the main principles, the regulations previously drafted, but the period of gradual exclusion was extended to seven years. The effect of the regulations, if finally promulgated in their present form, will be that the exclusion of women from underground work in the main coalfields and in the Punjab Salt Mines will be complete by April 1939, while in all other mines prohibition will become effective on 1st April 1929.

The proposals for a compulsory system of shifts in mines, though not at first acceptable to the industry generally, met with the approval of the local Governments mainly concerned, and the Government of India introduced a Bill to amend the Mines Act in the Legislative Assembly in March 1927. The main clauses of the Bill made it compulsory for mineowners who open their mines for work for more than 12 hours in any day to distribute their workers in shifts, so arranged that they do not overlap and that no shifts can be employed for more than 12 hours out of 24. The object was not the reduction of average hours of work in mines, for the weekly limits already secured this end, they prevented, for example, miners underground from working on an average more than 9 hours a day. The real

purpose of the Bill was to enforce more regular working and to prevent miners from spending long hours underground in intermittent work. The Bill, on being circulated, met with a large measure of support and it was passed through both Chambers of the Indian Legislature during 1928. The fixing of the limit for the shift at 12 hours naturally evoked some criticism, but the only convenient alternative would have been eight hours. And while proposals were made in the Legislative Assembly for the introduction of a compulsory 8 hours day, they were not accepted by the House. The Select Committee of the Assembly recorded their agreement with the view that the eight hours should be gradually worked up to and suggested that Government should re-examine the position in this respect after the Bill had been in force for three years. The main provisions of the Act* will not come into force until April 1930.

The administration of the Mines Act, unlike that of the Factories Act, is mainly a function of the Central Government, and the inspecting staff is maintained by the Government of India. The number of mines subject to the operation of the Act increased from 1,716 in 1920 to 1,992 in 1927, the greater complexity of the law and the development of mining methods have added substantially to the task of the inspecting staff.

(c) *Workmen's Compensation*

The question of framing a Workmen's Compensation Bill was taken up by the Government of India at the end of 1920 and in 1921 public opinion was invited on the main questions involved. The advisability of legislation was accepted by the great majority of local Governments and of employers and workers' associations, but it was generally recognized that the special conditions of India made it peculiarly difficult to devise a satisfactory measure. Industrial labour in India is drawn to a large extent from areas lying at long distances from the centres of industry, and the majority of industrial workers still retain their interest in the villages from which they come. Their dependents are frequently left behind there and they return to the villages when circumstances permit, and sometimes hope to return permanently after a few years in an industrial occupation. To the difficulties which this factor created in devising a practicable system of workmen's compensation were added difficulties from the comparative paucity of medical men and the illiteracy and ignorance of the workmen. And there was the obvious danger that, unless unusual precautions were taken, the tendency to litigation, which is strong

*Act XIII of 1928

even among the poorer classes, would go far to nullify any benefits the Act might confer

In order that the question might be fully examined in the light of all the factors involved it was referred to a small committee which met in Simla in June 1922. This committee, which was composed for the most part of members of the Central Legislature included a few prominent employers and labour leaders together with medical and insurance experts and drew up detailed recommendations for the framing of a Bill. These recommendations were generally accepted by the Government of India and a Workmen's Compensation Bill was introduced in the Legislative Assembly in September 1922.

The measure followed the British Act in its main principles and in some of its details, but it contained a large number of provisions designed to meet the special conditions of India. Its most striking feature, possibly, was its rigidity. An endeavour was made to frame an Act in which in as many cases as possible the liability to compensation, the amount of compensation and the persons to whom compensation was payable were determined by the law itself and could not be varied by any tribunal. The result necessarily was to make the measure somewhat arbitrary in its operation in special cases, but it was felt that this was infinitely preferable to leaving matters of importance to the judgment of tribunals and in consequence encouraging the tendency to litigation. In respect of the tribunals set up to decide disputes the Act followed the American models in preference to the British model and special commissioners were appointed with wide powers where required, and although provision was made for appeals to the High Court the right to appeal was severely limited.

The measure was introduced in the Legislative Assembly in September 1922 and was referred to a Joint Select Committee of both Houses which met in the following January in order to give an opportunity for public criticism of the Bill. The Committee, in addition to making a number of modifications in the details of the Bill, made one change of importance. The original Bill in addition to making provision for workmen's compensation, contained a chapter defining and modifying in favour of the workman the ordinary civil law in respect of employers' liability. These provisions were eliminated by the committee who were not satisfied that they were required; and the Bill was thus confined to a Bill for workmen's compensation. The Bill as amended passed through both Chambers without any further amendments of substantial importance. The Bill which as Act VIII of 1923 became law in March 1923, came into force in July of the following year.

THE STATE AND INDUSTRY

The Act applied in the first instance to workers in factories, mines and ports, to those engaged on the railways and in the more organized branches of the building trades and to several smaller classes of workmen, and it probably covered originally about 3 million workers. In addition, the Government of India were empowered to bring within the scope of the Act other classes of workmen whose occupations are hazardous and several such classes have been added since the Act came into force. Compensation is payable, subject to certain specified exceptions, for death or disablement caused by accidents arising out of and in the course of employment or by certain specified occupational diseases. The Government of India were empowered to add to the list of occupational diseases and one such addition was made in order to make it possible to ratify a Convention adopted by the International Labour Conference. With the same object a minor amendment was made* in 1926 in the provisions of the Act relating to occupational diseases. In September 1928 a Bill was introduced in the Legislative Assembly for the amendment of the Act in respect of a considerable number of details.

The administration of the Act has given rise to singularly little difficulty and the apprehensions felt at the time of its passing regarding its smooth working have been for the most part unfulfilled. But this is due, to some extent, to the fact that the workmen in many areas have been slow to realize the benefits which the Act conferred upon them. Statistics are not collected regarding all cases of claims made in respect of minor disablements in particular, the number of claims made under the Act, but the statistics available for the more important classes of workers, *i.e.* workers in factories, mines and docks and on railways and tramways, show that compensation was paid in respect of over 4,000 such persons in the second half of 1924 over 11,000 in 1925 over 14,000 in 1926 and about 15,500 in 1927. The compensation paid in 1927 amounted to about 10 lakhs of rupees. The proportion of contested cases has been small. Less than 300 cases were contested before Commissioners during 1927 and appeals against the orders of the Commissioners have been rare.

(d) *Trade Unions and Trade Disputes*

The question of trade union legislation came up before the first session of the reformed Legislature, in consequence of a suit arising out of a trade dispute in Madras. In 1920 the company owning a mill whose workers were on strike brought a suit against the leader

*By Act XXIX of 1926

of the local labour union which was conducting the strike and others, seeking to restrain them from inducing the plaintiffs' workmen to break their contracts and suing for damages for their actions in this respect. The case was eventually withdrawn on the dispute being settled, after an interim injunction had been obtained, but the proceedings suggested that, in the absence of legislation, even legitimate trade union activity was attended by considerable peril. And the Legislative Assembly, on a resolution moved by Mr. Joshi the representative of labour interests, and accepted in an amended form by Government, agreed in March 1921 that steps should be taken as soon as practicable to introduce such legislation as might be necessary for the registration and protection of trade unions.

The Government of India published tentative proposals for legislation in September 1921, and evoked a large mass of opinions. Discussing these later in the Legislative Assembly, the Hon'ble Sir Bhupendra Mitra observed —

“ The opinions expressed in response to our invitation are remarkable for their diversity. There are some who consider the proposed legislation to be premature and who would prefer that we should not proceed with it at all. There are some others who, while recognizing the need for the proposed legislation, apparently consider Trade Unions to be dangerous and pernicious growths whose activities should be controlled rigidly so that they may not eventually overwhelm the commonwealth. There are others again who regard trade unionism as a new religion which, given sufficient license would bring about the millennium much more rapidly than any existing religions promise to do ”

After prolonged examination of the question the Government of India published a Bill on new lines in 1924 and circulated it for criticisms. After these had been received a few minor modifications were made in the Bill, which was introduced in the Legislative Assembly in January 1925. While individual clauses of the Bill were adapted from provisions in British and Dominion legislation, the Bill exhibited an essential difference from these laws. For instead of granting privileges to all trade unions, it restricted the benefits which it proposed to confer to those unions which accepted registration. Registered unions were offered a substantial measure of immunity from civil suits and from prosecutions for criminal conspiracy, while registration involved on the other hand the acceptance of restrictions on the manner in which trade union funds could be spent.

and the preparation of regular audited accounts. The position of unions which did not desire to register was thus left entirely unaltered by the Bill.

A number of amendments were made by the Legislative Assembly in Select Committee and in the House. The most important of these was the introduction of a clause permitting registered trade unions to maintain funds for political purposes. The provision followed the British law in many respects, but instead of enabling (as that law did at the time) unions to collect from all members who had not contracted out of the liability to subscribe, it provided that no member should be compelled to contribute to a political fund and that failure to contribute would not involve any disability or disadvantage except in relation to the control and management of the political fund. The Bill, after being debated at great length in the Legislative Assembly, was passed through both Houses in March 1926*, the Act did not come into effect until June 1927.

An endeavour was made in a private member's Bill introduced in February 1928 to provide that the privilege granted to registered trade unions in respect of immunity from criminal prosecution should be extended to other combinations of workmen. The Bill, after being circulated for opinions, was rejected by the Legislative Assembly in September 1928.

Reference was made in the previous chapter to certain discussions regarding legislation for the settlement of industrial disputes, and in 1924 the Bombay Government prepared a Bill for introduction in the Legislative Council. But the Government of India were by this time formulating proposals for all-India legislation, and the local Bill was consequently withheld.

In publishing their proposals for criticism, the Government of India indicated that, in their view, the position had changed materially since they raised the question in 1920. Public opinion on questions of this kind had grown steadily more vocal and there were distinct indications of the growth of a trade union movement. The main portion of the bill drafted by the Government of India followed in a number of respects the British Industrial Courts Act of 1919 and empowered but did not compel Government, when any dispute arose or was apprehended, to refer the dispute to a Board for investigation and settlement. Standing panels were to be appointed from which members of Boards could be selected. In addition the bill contained provisions based on the principles of the Canadian Industrial Disputes

*As Act XVI of 1926, minor amendments were made by Act XV of 1928.

Investigation Act of 1907, relating to such public utility services as might be notified. In these services the cessation of work without notice was to be prohibited and, if a Board was appointed to investigate a dispute, the prohibition was extended over a period sufficient to enable the Board to report.

Opinions on the Bill were received in 1925, but the Government of India decided to postpone the introduction of legislation until after the Trade Unions Act was in force and it was not until September 1928 that the Trade Disputes Bill was introduced in the Legislative Assembly. This Bill differed in a number of respects from the Bill published in 1924. In proposing to establish two different types of industrial tribunal the main portion of the Bill followed more closely than the previous Bill the general lines of the British Industrial Courts Act of 1919. It did not, however, follow the English Act in setting up any standing court. Both the Courts of Enquiry and the Boards of Conciliation contemplated by the Bill are tribunals appointed *ad hoc* for each dispute. In respect of the public utility services the Bill provides for a penalty for strikes entered upon without a month's notice in writing. This provision applies automatically to certain public utility services and can be extended to others (including railway services), but it applies only to persons employed on monthly wages in these services. Finally the Bill contains a number of provisions based on the British Trade Unions and Trade Disputes Act of 1927 relating to strikes and lockouts of a sympathetic character designed to coerce the Government either directly or by inflicting hardship on the community. In respect of strikes and lockouts of this character, those taking part are deprived of the protection afforded by the Indian Trade Unions Act 1926 and persons declining to participate are protected from penalties to which they might otherwise be subjected by trade unions or other societies. The Bill after being introduced in the Legislative Assembly was circulated for eliciting opinions.

(c) Miscellaneous measures

The Indian Ports (Amendment) Act of 1922* was a minor measure which owed its existence to the passing by the International Labour Conference at Washington of the draft Convention relating to the minimum age of children in industrial employment. The Act laid on local Governments the obligation of making rules prohibiting the employment of children under 12 on the handling of goods at quays docks etc., and passed through both Chambers of the Indian Legislature without opposition.

*Act XV of 1922.

The Industrial Commission called attention to the inconvenience caused to industrialists by the existence of a number of differing Acts relating to boilers throughout India and to the unsatisfactory character of these Acts. On the suggestion of the first Conference of Directors of Industries, a small committee was appointed at the end of 1920 to consider the question of the unification of the Acts and regulations relating to the inspection and upkeep of boilers in India. The Committee found that there were seven provincial Acts in force which differed not merely in form but in principle and that the differences were not such as could be justified by the particular requirements of local conditions. Some of the Acts were of an antiquated character and in one major province and in two minor provinces there were no laws relating to the inspection of steam boilers. In the Devolution Rules "boilers" was declared to be a subject for central legislation and the Committee recommended the enactment of a uniform law applicable to the whole of India and the repeal of the various provincial Acts. Their recommendation led to the introduction and passing of the Indian Boilers Act of 1923*. The Act, which has been supplemented by a large number of regulations, is administered by local Governments who employ a qualified staff for the purpose and it has proved generally adequate for securing the safety of those employed where boilers are in use.

Reference has already been made to the amendment in 1920 of the Workmen's Breach of Contract Act. There was at the time a considerable section of public opinion in favour of the repeal of all enactments of this measure and in February 1923, Mr K. C. Neogy asked for leave to introduce in the Legislative Assembly a Bill to repeal the Act. Government opposed the motion which was rejected, but they undertook they would themselves bring in a Bill which would have the effect of repealing the Act with effect from 1926. At the same time they indicated that local Governments would be free to place before their own Legislatures measures designed to give protection, where necessary, to industrialists in particular areas and under particular circumstances. In 1924 notice was given by several members of a Bill to repeal with effect from April 1926 not merely the Workmen's Breach of Contract Act, but the sections of the Indian Penal Code which provided for criminal penalties for breach of contract by workmen and a number of sections of the Assam Labour and Emigration Act of 1901 to the same effect. The latter sections, though still on the statute book, have long been rendered ineffective

* Act V of 1923

by notifications, but Government introduced in 1921 an official measure repealing the Workmen's Breach of Contract Act and the two sections of the Indian Penal Code under which workmen could be punished for breaches of contract. The Bill was passed into law in February 1925 and came into effect on 1st April 1926.

Two private members' bills relating to labour were introduced in the Legislative Assembly in 1924. Mr. Joshi's Maternity Benefits Bill sought to prevent the employment of women in factories, mines and certain tea estates shortly before and after confinement and to secure maternity benefits for such women when confined. The benefits were to be met from a general fund established in each province under the control of the local Government, and built up by contributions from employers. The Bill, after being circulated for opinions, came again before the Assembly in the following year. It was opposed by Government on the ground that the necessity for legislation, and particularly legislation applicable throughout India, had not been established, that the principles of the Bill were questionable, and that it might have harmful results for female labour. The motion to refer it to a Select Committee was defeated by 51 votes to 47.

Wages are paid in India on varying periods, but the monthly system of payment is generally the commonest one. And the principal clause of Mr. Chaman Lall's Weekly Payments Bill provided for the compulsory adoption of a system of weekly payments for workers' wages. But the bill permitted employers who were prepared to withhold payments of wages for not more than a week to continue payment on other systems, and its main object was to check the habit of paying wages considerably in arrears which is by no means uncommon.

The Bill was circulated for opinions and came before the Assembly for the second reading in February 1926. Opinions on the Bill had been generally adverse and opposition in particular had been directed towards the proposal to interfere with the existing periods of payment. But an inquiry made by Government into the periods of payment for wages and the extent to which they were withheld had indicated that the subject deserved further examination and Government, by passing the Bill, gave an assurance that the question of legislation to secure the prompt payment of wages would be considered. The mover of the Bill then withdrew it. The Government of India invited opinions from local Governments and the public on the advisability of legislation and about the same time they raised the question of legislating to regulate the deductions which employers might make from wages by way of fines, etc. By the middle of 1928 the Government of India had not formulated conclusions on the subject.

(f) Provincial legislation

All the measures previously mentioned have been all-India measures, and have been considered by the Central Legislature. Local Legislatures are also competent to legislate in labour matters, but when regard is had to the volume and scope of the all-India labour enactments brought forward since the Reforms it is not surprising that the output of the Legislative Councils in this direction should be very small.

The only two provincial labour measures which reached the statute-book have been official ones and both have been concerned with the subject of breaches of contract by workmen. When the Government of India in 1923 undertook to introduce a measure repealing the Workmen's Breach of Contract Act of 1859, they indicated that local Governments might desire to place before their Legislative Councils some measure to give protection to employers in the matter. And the Coorg Legislative Council in 1925 recommended to the Chief Commissioner of Coorg the introduction of a measure of the kind in question. A Bill which provided for criminal penalties for breaches of contract by agricultural and other workers in Coorg and also contained a number of provisions imposing obligations on their employers in respect of housing and other matters was prepared and submitted to the Governor General for sanction. The principle of the Bill was one which the Government of India were anxious to see eliminated from Indian law and sanction was granted subject to important modifications. A clause was added limiting the operation of the Bill to five years from 1st April 1926 and the Bill was confined in its scope to workmen employed in the cultivation and production of coffee, tea, rubber and other agricultural products. The President of the Council, in putting the motion for leave to introduce the Bill to the Council, remarked

it is advisable that I should state briefly the conditions which have led the Government of India to advise the Governor General to grant sanction to the introduction of the Bill in its present modified form

I must impress on all honourable members that the Government of India consider the principle underlying this Bill to be opposed not merely to Indian public opinion, but to all modern thought on the question of labour legislation, and therefore, they regret that any fresh legislation of this kind should have been found necessary in any part of India. They have however already recognised that in areas where Act XIII of 1859 or similar Acts have been extensively

used serious injury might be caused by withdrawing all such legislation without adequate warning. Although a period of three years' grace was allowed in the case of the withdrawal of Act XIII of 1859, it is evident to the Government of India that the agriculturists in Coorg, relying on the introduction of fresh legislation to replace that Act, have taken no steps to enable their industry to meet the altered conditions that would result from the absence of any legislation of this kind. It has, therefore, been considered desirable that a reasonable period should be allowed to enable agriculturists to adapt themselves to the new conditions that will prevail when legislation of this kind ceases to be in operation. A further consideration is the fact that, although the question of the repeal or amendment of the Madras Planters' Labour Act of 1903 is about to be considered, that Act is still in force in parts of the Madras Presidency adjoining Coorg."

The Bill, after being amended in minor particulars, became law in 1926.

On the other hand, the Madras Planters' Labour Act of 1903, referred to above, was subsequently repealed. The Act was applicable to labour employed in plantations in two Madras districts and it included provisions both for criminal penalties for breaches of contract and for the welfare of the workmen subjected to these penalties. The question of repealing the penal provisions for breach of contract was considered by a Committee, the majority of the Committee recommended the repeal of the Act, provided that Government simultaneously undertook to introduce legislation generally applicable to all industries where labour was employed on a system of advances. But the Government of Madras came to the conclusion that the Act should be repealed without the substitution of any fresh measure. The Bill repealing the Act was passed by the Legislative Council in 1927 and becomes operative at the beginning of 1929. As a result of the several enactments passed on this subject, by 1931 there should be no effective measures on the statute-book under which workmen can be prosecuted.

Other official Bills relating to labour subjects which have been introduced include the Bengal Tea-Gardens Public Health Bill and the Bombay Statistics Bill. The former bill which was introduced in the first Bengal Legislative Council in 1923 lapsed with the dissolution of that Council, it was designed to set up a Board of Health for the tea producing areas of Bengal and to replace the Jalpaiguri

THE STATE AND INDUSTRY

Labour Act of 1912 which provides for the collection of certain particulars bearing on the health of labour in the tea gardens of Jalpaiguri. The latter Bill was designed mainly to overcome the difficulties experienced by the Bombay Labour Office in collecting labour statistics. It proposed to arm the Director of the Office with extensive powers to collect statistics relating to prices rents wages, hours employment industrial disputes and other matters, and was based largely on laws in various Dominions. Introduced in 1924, it met with vigorous opposition in the Bombay Legislative Council and the local Government abandoned the proposal.

Very few private Bills relating to industrial labour have been introduced in the Legislative Councils and none has yet been passed. The only such Bill which has made substantial progress is a Bill to provide for Maternity Benefits to factory workers in Bombay Presidency which was based on the Bill rejected by the Legislative Assembly. It was introduced in the Bombay Legislative Council in 1928 and in spite of the opposition of the local Government was referred to a Select Committee.

INDEX

A

Acetone, 14
Advisory Boards, 10, 30, 33, 39, 69, 100, 108
Agricultural implements, 8, 117, 119
Aluminium hollow-ware, 2
Apprentices, 39, 45, 46, 47, 49, 50, 97
Assam, 3, 26, 48, 54, 58, 61, 62, 65, 110, 138, 140
Assam Labour and Emigration Act, 138, 162
Assembly, Legislative, 34, 72, 76, 86, 87, 88, 89, 114, 115, 116, 117, 118, 122, 123, 135, 140, 141, 142, 150, 154, 156-63
Aviation, Civil, 40

B

Banks, industrial, 11, 104, 108
Belting, 124
Benares Hindu University, 41
Bengal, 3, 26, 32, 43, 45, 52, 55, 56, 63, 68, 69, 70, 72, 75, 78, 80, 81, 82, 140, 143, 146, 148, 149, 154, 165
Bengal Tanning Institute, 43, 68, 82
Bihar and Orissa, 26, 38, 41, 43, 44, 46, 49, 53, 56, 58, 59, 62, 65, 70, 72, 73, 74, 78, 83, 93, 100-2, 107, 108, 129, 140, 144, 154
Bihar Engineering College, 41, 44, 46
Blanket-making, 63, 101
Boards of Conciliation, 148-9, 161
Board of Economic Inquiry, Punjab, 143
Board of Industries and Munitions, 14, 26, 30
Bobbins, 103, 109
Boilers, 139, 141-2
Bombay, 26, 33, 36, 37, 39, 46, 47, 55, 58, 61, 63, 64, 70, 75, 77, 93, 103, 126, 138, 140, 143, 144, 145, 146-7, 148, 149, 160, 165, 166
Bombay Millowners' Association, 77, 126, 139
Bounties, 111, 117, 119, 120, 121, 122, 126
Brasswork, 52, 70
Bulletins of Indian Industries and Labour, 28n, 31, 34n., 78, 146
Burma, 26, 33, 36, 47, 54, 59, 62, 65, 73, 75, 78, 93, 110, 140, 144
Butler, Sir Harcourt, 42

C

- Calcutta, 31, 43, 45, 76, 131, 132, 140, 143
- Calcutta Research Tannery, 43, 68
- Carpentry, 51, 52, 53, 54, 55
- Carpet-making, 53, 55, 63
- Casein, 63, 64, 70
- Cawnpore, 4, 31, 42, 48, 52, 138, 144
- Cement, 68, 78, 123, 124
- Census of Wages, 145
- Central Cotton Committee, 71
- Central Provinces and Berar, 26, 33, 41, 48, 55, 58, 60, 65, 82, 140, 144, 154
- Ceylon, 131
- Chatterjee, Sir Atul, 135
- Chatterton, Sir Alfred, 2
- Chaman Lall, Mr D, 163
- Chemists' Conference, 14
- Chemical industries, 16, 38, 68, 69, 70, 81, 122, 123
- Chemical Research Institute, Central, 26, 66
- Chemical Service, 12, 15, 16, 28, 29
- Chemical Services Committee, 15, 16, 17, 28, 66
- Children's labour, 137, 142, 143, 150, 153, 161
- Chintamani, Mr C Y, 21
- Clothing, Army, 14, 91
- Coal, 72, 73, 94, 124, 125, 129-33, 154-5
- Coal Committee (1924-5), 131, 132
- Coal Grading Board, 132
- Coalfields Committee (1920-21), 72, 129, 130, 154
- Cocoanut fibre, *see* fibres
- Commissioner of Labour, Madras, 143, 147, 149
- Commissions and Committees, *see* under various subjects
- Constitutional reforms, *see* Reforms
- Coorg, 164-5
- Co operation, 65, 92-3, 109
- Cottage industries, 11, 32, 33, 57-65, 78, 106
- Cost of living, *see* index numbers
- Cotton Committee (1919), 71, 128, 150
- Cotton excise duty, 112, 115, 125, 129, 130
- Cotton ginning, 48, 106, 128, 150
- Cotton Ginning and Pressing Factories Act, 128
- Cotton spinning and weaving, 48, 71, 77, 110, 111, 125-8, 138, 145-6
- See also* Spinning by hand and weaving, handloom

Cotton-seed oil, 4, 5
 Cotton Transport Act 128
 - Chaman Sir F., 84
 Subsidy of State 35, 114 132 141 142 154
 Survey of Enquiry 147 148 161
 Swadlow, Lord, 7

D

Dacca Conference (industries) 3
 Delhi, 50, 74, 95
 Demonstration factories, 63-4 95 101
 Department of Commercial Intelligence 76 77
 Department of Industries Central, 11 12 18 20-23, 26, 30 31 33, 34, 89
 Department of Industries and Labour 34 155
 Department of Industries provincial, 3 5 7 10 11 13 15 26 30-32 33, 36, 41 57 59 60, 69 79-83 99 100 103
 Departments of Industries Conferences 26 28 31, 34, 161
 Disputes, industrial, 139 147-9 158-61
 Drugs, 38, 81
 Dwarkadas, Mr Jamnadas, 115
 Dyeing, 38 51, 52, 53, 54, 62, 106 110

E

East Africa, 77
 Embroidery, 64, 78
 Employer's liability, 157
 Engineering, 38, 40 41 45, 46 47, 48, 89 117
 Exhibitions —
 Allahabad 4
 British Empire (Wembley), 64
 Hand-weaving (Patna) 59
 External Capital Committee, 135-6

F

Factories, 80 94, 109, 110, 128, 142, 150-2, 157 *see also* Factory legislation
 Factory Commission Indian 152
 Factory legislation, 137, 138 141, 146, 150-2
 Famine Commission 2
 Feetham, Mr Justice, 23

- Fibres, 69, 70
- Fines, on workmen, 145, 163
- Fiscal Commission, Indian, 114-6, 125, 135
- Fish canning, 99
- Fish meal, 99
- Forest Research Institute, 66
- Franchise Committee, 140
- Freights, 125, 132, 133, 134
- Fruit preservation, 98, 107
- Functions Committee (Constitutional Reforms), 21, 23, 139, 140

G

- Gandhi, Mr M K, 2
- Geological Survey, 22, 66, 72-4, 76
- Glass, 38, 69, 78, 109
- Glue, 69, 97
- Glycerine, 69, 97, 111
- Govind Das, Seth, 35
- Grants to industrialists, 109, 110
- Groundnuts, decorticating, 106
- Guano, 99
- Guindy Engineering College, 40, 41

H

- Hewett, Sir John, 3
- Hides, 13, 82
- High Commissioner for India, 38, 40, 85, 86
- Holland, Sir Thomas, 9, 13, 21, 23, 28, 29
- Hosiery, 39, 54, 62, 109
- Hours of work, 137-8, 139, 141-2, 150 1, 153, 154, 155 6
- Housing, 139, 146-7
- Humidification, 145 6
- Hydro-electric schemes, 74-75

I

- Imperial Institute, London, 72
- Imperial preference, 114, 121
- Index numbers (cost of living), 144-5
- Indian Industrial Conference, 2, 3, 7
- Indian Institute of Science (Bangalore), 48, 72

- Indian Mining Association 124 130
 Indian Mining Federation, 124 130
 Indian Students Committee 38
 Indigo, 71
 Industrial Commission, Indian, 5 8 9-32 34 36 37, 38, 39, 57, 66,
 74, 84 86 104 161
 Industrial Courts, 148 160
 Industrial Loans Act, 106-7
 Industrial schools, 5, 7 11 50-6, 63
 Industrial Service Imperial 12 15 24 27 28 29
 Industries Committee, Bombay (1927) 29-37
 Industries Committee United Provinces (1925) 39, 92, 108
 Inks 69, 81 96 97 99, 109 123, 124
 Innes, Sir Charles, 19, 116
 Intelligence, industrial 5, 10, 11, 14, 15 26, 34 76-79
 International Labour Organization 141-3, 146, 150 153 161
 Iron and Steel *see* Steel.

J

- Jams and jellies, 98
 Jamshedpur 43 89, 118, 121
 Jamshedpur Technical Institution, 43 44, 46
 Japan, 126, 127
 Joint Select Committee (Government of India Bill), 23, 24, 27, 113,
 114, 140
 Joint Select Committees (Indian Legislature) 151 153, 157
 Joshi Mr N M 159, 162
 Journal of Indian Industries and Labour, 31 77
 Jute, 63, 70

K

- Kerosene, 125

L

- Labour 13 31 137-166
 Labour Bureau 26 34 143 145
 Labour Gazette Bombay 77 145
 Labour Intelligence Office Bengal 143
 Labour legislation 126 127 136 142, 148 166
 Labour Office Bombay, 77, 143, 144, 145, 163
 Labour representatives 139-140, 159

- Railways 40 45 46 47 48 49 67 86 90 93 94 118 120 130, 131 134
147, 149
- Rainy, Sn George, 127n
- Ramsaran Das Lala, 132
- Rav, Sir P C, 15, 16, 27n
- Reforms, constitutional 17-25, 33 34, 74 88 93 104, 111 112-4
139-140 142 151 153
- Reforms Enquiry Committee, 140
- Research Industrial 10 14 15 16 22 42 66-73
- Resin 102
- Retrenchment 32-34 42 52, 64 68, 76, 89, 145
- Retrenchment Committee Bengal 32, 52
- Retrenchment Committee Indian 33 34 42 76n 89, 145
- Rice hulling 106, 107, 110
- Ruiki Engineering College 6 40 41, 42

S

- Salt, 94, 155
- Scholarships 5 34 37-40, 43, 55
- School of Mines, Dhanbad, *see* Mines School of
- Seamen's Recruitment Committee 143
- Security Printing Press 94
- Services *see* Chemical Service, Industrial Service
- Shellac *see* Lac
- Sibpur Engineering College, 40, 41, 45
- Silk, 53, 62, 63, 70, 106
- Sleepers, railway, 67
- Soap 39 69 80, 81 97 110 111
- South-Africa, 124, 125
- Spelter, 124
- Spinning, by hand, 57
- State Aid to Industries Acts and Bills, 104-108
- Statutory Commission (Constitutional Reforms), 35
- Stationery and Printing Department of 93
- Steel, 43 73, 95 107, 111 117-122
- Stephenson, Sir Hugh, 23
- Stipends to pupils, 44, 55, 56
- Stores Departments, 12 34, 40, 85-93
- Stores purchase, 10 13, 31, 84-93
- Stores Purchase Committee 17, 84-87, 89, 90
- Stores rules, 86-88

- Court, Strikes, 125, 126, 138-9, 143, 147, 148-9, 158
 Court, Students (Luton) Committee 38
 Crew, Sugar, 38, 39, 42, 60, 98, 99, 100, 106, 108, 109, 111
 Sulphur 122
 Surveys, industrial 77-79
 Swadeshi movement, 2, 17

T

- Tanning (and leather), 2, 5, 38, 39, 42, 43, 18, 19, 55, 68, 69, 82, 102, 110
 Tariff Board, 115-127
 Tariffs *see* Protection
 Tata Iron and Steel Company, 43, 117, 121
 Tea, 128, 129, 164, 165
 Tea Cess Committee, 128-9
 Technical education, 3, 5, 6, 7, 10, 18, 22, 27, 30, 33, 36, 50
 Technical Education Committee, Bombay, 37, 16
 Technical and Industrial Education Committee, Madras, 37, 54
 Technical and Vocational Education Committee (Burma), 36
 Technological Institute (U P), 6, 41, 42, 67, 68, 81, 83
 Test Houses, 89, 92
 Thomason College, Rucki, 6, 40, 42
 Thorpe, Professor J, 15
 Timber, 66, 67, 70
 Tinplate, 117, 119, 121-2
 Trade Commissioners, 76, 77
 Trade Disputes, *see* Disputes, industrial
 Trade Journal, Indian, 77
 Trade Unions, 139, 140, 142, 158-161
 Trawling, 99, 100
 Turpentine, 68, 102, 103

U

- Unemployment, 142
 United Provinces, 3, 6, 7, 21, 26, 37, 39, 42, 48, 50, 51, 56, 59, 65, 67, 68, 74, 78, 79, 81, 82, 91, 92, 102, 103, 108-110, 140

V

- Victoria Jubilee Technical Institute, 47, 48, 49
 Vocational Training Committee, Central Provinces, 41

W

- Wages census, 145
- Wages, payment of, 145, 163
- Wagons, 117, 120, 122, 130, 131, 133, 134
- War, the Great, 7, 8, 130, 131
- Weaving Institutes and Schools, 51, 52, 53, 54, 55, 58, 59, 61 63, 110
- Weaving, handloom, 51, 54, 55, 57-63, 65, 106, 126
- Wine, 107, 117, 120, 122, 124
- Wool, 53, 63, 70, 101
- Women's labour, 137, 142, 146, 150, 153, 154 5
- Workmen's Breach of Contract 137, 138, 162, 164 5
- Workmen's Compensation, 140, 142 3, 156 8
- Workmen's Compensation Committee, 156, 157
- Works Committees, 148

